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Discrimination Between Neutral and Unsafe Stimuli, Return of Fear, and Anxiety

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Discrimination Between Neutral and Unsafe Stimuli, Return of Fear, and Anxiety

A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in Psychology

by

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ABSTRACT OF THE DISSERTATION

Discrimination between Neutral and Unsafe

Stimuli, Return of Fear, and Anxiety

by

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Abnormalities in basic fear conditioning and extinction processes may contribute to the development and maintenance of anxiety disorders. Specifically, the ability to distinguish between a stimulus that predicts an aversive outcome and a stimulus that predicts its absence may impact fear conditioning, extinction, and return of fear. This dissertation will include three papers investigating the role of discrimination between neutral and unsafe stimuli in the development and maintenance of conditional fear. Anxiety has been linked to discrimination (e.g., Jovanovic et al., 2013; Lissek et al., 2014), however it is unknown whether discrimination may explain the link between trait anxiety and return of fear. Study 1 examines whether discrimination mediates the relationship between trait anxiety and return of fear in a classical conditioning paradigm. There is little evidence examining whether discrimination between neutral and unsafe stimuli can be manipulated. Study 2 examines whether a positive or negative mood induction may impact discrimination and therefore impact extinction and

return of fear. Study 3 investigates whether there exist functional differences when participants are presented the CS+ versus the CS-, and whether these differences accompany anxiety symptoms, altered fear extinction and extinction recall. No previous research has investigated this. In sum, we will determine whether the ability to distinguish between a neutral stimulus and an unsafe stimulus is related to trait anxiety and return of fear, whether this discrimination can be manipulated by mood, and whether the phenomenon of discrimination impacting return of fear can be observed using neuroimaging methods.

The dissertation of Lindsay K. Staples is approved.

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INTRODUCTION

Anxiety disorders can be conceptualized as disorders of false alarms. Indeed, difficulty with identifying neutral stimuli in the environment as nonthreatening is a commonly observed characteristic of anxiety disorders (Duits et al., 2015). Basic Pavlovian fear conditioning paradigms are commonly employed to examine the learning mechanisms that underlie these deficits. In differential Pavlovian fear conditioning paradigms, two conditional stimuli (CS) are used: a CS+ which predicts the aversive unconditional stimulus (US) and a CS- which predicts its absence. Over the course of fear acquisition, individuals who discriminate between each CS successfully will come to anticipate the US when presented with the CS+ and anticipate its absence when presented with the CS-. Individuals with anxiety disorders, however, show elevated fear responding to the CS- (e.g., Jovanovic et al., 2013; Lissek et al., 2014; Lissek & Grillon, 2012).

Indeed, overgeneralization of conditional fear from a CS+ to a CS- as measured by startle has been observed in panic disorder (Lissek et al., 2010). Fear responding to neutral stimuli has also been linked to generalized anxiety disorder (Lissek, 2014) and posttraumatic stress disorder (Lissek & Grillon, 2012). Similarly, difficulties with discriminating between a CS+ and a CS- have been observed in anxiety disorders (e.g., Jovanovic et al., 2013; Lissek et al., 2014) and impact retention of fear extinction memories (Dibbets, van den Broek, & Evers, 2015; Grillon, 2002; Grillon & Morgan, 1999). Notably, a meta analysis did not find significant differences between anxiety patients and controls in discrimination learning, however did find elevated fear responding to the CS- (Duits et al., 2015).

State anxiety has been linked with the ability to learn the relationship between the CS+ and the US, and difficulties with learning this contingency have been associated with increased contextual anxiety during a Pavlovian fear conditioning paradigm (Prenoveau, Craske, Liao, & Ornitz, 2011).

Following fear acquisition, extinction is performed, in which each CS is presented in the absence of the US and the organism learns safety. Following extinction, fear memories can sometimes return (Craske & Mystkowski, 2006). Fear memories return in the phenomena of spontaneous recovery and context renewal, suggesting that extinction is not erasure of the original fear memory but rather new, inhibitory learning (e.g., Bouton, 1993). In spontaneous recovery, fear returns over the passage of time following extinction learning, with full spontaneous recovery occurring at 14 days in rodent samples (Quirk, 2002). In context renewal, fear responding to the CS returns when the CS is presented in a context other than the extinction context (Bouton, 1993).

Currently, it is unknown whether the ability to discriminate between a CS+ and CS- may mediate the relationship between trait anxiety and return of fear. Additionally, no research has investigated whether discrimination can be manipulated using a positive or negative mood induction. Finally, it is unknown whether decreased discrimination as measured by functional activation in regions associated with fear conditioning accompanies increased anxiety, and whether this discrimination impacts extinction learning and retention. The aim of the current investigation is threefold: 1) To determine whether trait anxiety is related to discrimination and if that in turn is accompanied by changes in return of fear, 2) To

determine whether a positive or negative mood induction can impact discrimination between a CS+ and a CS- and affect extinction learning and retention, and 3) To examine whether differential activation in particular brain regions accompanies anxiety and decreased extinction learning and recall.

Study 1: Discrimination as a Mediator of the Relationship Between Trait Anxiety and Return of Fear

Trait anxiety may be associated with increased return of fear. If so, this relationship may be explained in part by impaired ability to distinguish between neutral and unsafe stimuli. Disorders of anxiety have indeed been associated with increased return of fear following successful fear extinction, however there is a dearth of evidence on the relationship between trait anxiety and return of fear. Anxiety may be linked to impaired discrimination, however findings on this are mixed. In a few studies, impaired discrimination has been associated with elevated return of fear. Each of these relationships should be confirmed and the possible mediating role of discrimination in the relationship between trait anxiety and return of fear should be investigated.

Increased anxiety may be associated with increased return of fear. While it is unknown whether increased trait anxiety accompanies increased return of fear, return of fear is frequently observed among individuals with anxiety disorders. Indeed, a significant portion of patients show a resurgence of symptoms following treatment (Arch & Craske, 2009). The basis for this return of fear lies within Pavlovian fear conditioning and extinction processes. Following exposure therapy,

the clinical analogue of fear extinction, fear can return over time in a phenomenon known as spontaneous recovery (Baum, 1988). Additionally, when individuals enter contexts outside the therapy context, fear can return in a phenomenon known as context renewal (Bouton, 1993).

While these forms of return of fear are the basis for the resurgence of symptoms seen in clinical populations, few studies have examined return of fear in the context of basic fear conditioning paradigms among clinical populations. Some disorders associated with anxiety have been linked with failure to recall extinction learning (i.e., return of fear). For example, individuals with posttraumatic stress disorder (PTSD) show elevated skin conductance responding at test of extinction recall compared to healthy controls, indicating poor retention of extinction memories and elevated return of fear (e.g., Milad et al., 2008; Milad et al., 2009). Individuals with obsessive compulsive disorder have also shown impaired recall of extinction memories in a basic fear conditioning paradigm (McLaughlin et al., 2015). Whether this increased return of fear can be detected among individuals with elevated trait anxiety is not yet certain.

Increased anxiety may be associated with decreased discrimination between a CS+ and CS-. Again, we first look to individuals with anxiety disorders, among whom increased responding to the CS- has been observed (Duits et al., 2015). This increased responding has also been identified in individuals with high trait anxiety (Gazendam, Kamphuis, & Kindt, 2013). State anxiety has been associated with awareness of the association between the CS+ and the US (Prenoveau, Craske, Liao, & Ornitz, 2011). Trait anxiety has also been associated with the ability to

distinguish between a CS+ and a CS+ accompanied by a safety signal (Chan & Lovibond, 1996). This may signal a relationship between anxiety and failure to identify nonthreatening cues in the environment and distinguish them from danger cues. However, a recent meta analysis of several conflicting studies did not detect an overall difference between anxious and control participants in their ability to discriminate between the CS+ and CS- (Duits et al., 2015). Further research should disambiguate the relationship between anxiety and discrimination.

Finally, decreased discrimination may be related to increased return of fear. It has indeed been shown that individuals who are less able to discriminate between a CS+ and a CS- show more return of fear as measured by startle response at follow-up (Grillon, 2002). In a differential fear conditioning paradigm, only participants who were aware of the CS+-US contingency showed differential conditional responding while the unaware participants who did not show this discrimination showed increased fear at test (Grillon, 2002). This indicates that reduced discrimination may be associated with increased spontaneous recovery, however the impact of discrimination on context renewal is unknown.

Study 2: Mood Induction, Discrimination, and Return of Fear

Induction of positive or negative mood may impact discrimination between neutral and unsafe stimuli. Emotional categorization theory predicts that mood induction will impact the extent to which the individual perceives two stimuli as similar. In brief, this theory states that individuals use emotional response

categories when they are experiencing emotion (Niedenthal, Innes-Ker, & Halberstadt, 1999).

Humans group stimuli into categories. For example, a husky, a dachshund, and a dalmatian may all be categorized as dogs based on particular features such as fur, tails, legs and snouts. However, categories are determined by factors not only related to the object itself but also related to the individual perceiving the object, including goals, memories, and histories. For example, a husky may be assigned the category of “dog” or, alternatively, of “things from my childhood home.” Thus, what may appear to one person as a list of unrelated objects such as a necklace, a beach in Maine, a hairbrush, and an armchair may to another person fall in the emotional category of “things that remind me of my mother”. Emotional categorization theory asserts that, when the individual is in an emotional state, objects are more likely to be categorized based on their emotional value rather than on their other properties (e.g., categorizing a necklace as “something that reminds me of my mother” rather than as “a type of jewelry”).

Specific emotions give rise to specific categories. For example, a lion, a precipice, and a particularly difficult statistics exam may all fall into the category of fear-provoking items. Experiencing the emotion of fear activates a tendency to categorize stimuli as being related to fear. In lexical decision studies by Niedenthal, Halberstadt, and Setterlund (1997), participants were induced to feel specific emotions and then asked to make word/nonword judgments about a series of word and nonword letter strings. Emotion-congruent words were facilitated more than emotion-incongruent words. (e.g., words related to happiness were more likely to

be identified correctly for participants in the happy condition). This suggests that emotional response categories are grounded in specific emotional states. Because specific emotions differentially facilitate categorization of emotion-related stimuli, it is possible that individuals in a negative mood induction will be more likely to rate fear-related stimuli (i.e., conditional stimuli) as more similar than individuals in a positive mood induction.

Specific emotions give rise to specific categories, but emotional categorization may not be contingent on the experience of a particular emotion. While specific emotional states may differentially facilitate particular categorizations, Emotional Categorization Theory argues that any emotional state will increase the use of all emotional response categories; an individual will be more likely to categorize the necklace as “something that reminds me of my mother” when he or she is experiencing emotion more than if he or she is neutral regardless of whether the emotion is sadness, anger, or happiness. An empirical study by Niedenthal, Innes-Ker, & Halberstadt, (1999) supports this perspective. In this study, individuals were randomized to a happy, sad, or neutral mood induction. They then categorized happy and sad words as more similar to an emotion concept or a non-emotion concept. Individuals in emotional conditions grouped happy concepts together and sad concepts together more than those in the neutral condition. Furthermore, individuals in the happy condition grouped happy concepts together and sad concepts together to the same degree that those in the sad condition did. It is possible that only a negative mood induction will cause individuals to perceive fear-related stimuli as more similar, but because any emotional state can increase the

use of all emotional response categories, it is possible that both positive and negative mood states will cause the individual to perceive a CS+ and a CS- as more similar. Individuals will be more likely, when in an emotional state, to categorize a CS+ and a CS- as “stimuli that scare me” rather than “pictures of faces”.

Emotional Categorization Theory offers an explanation for these phenomena. It suggests that, during the experience of emotion, individuals attend to their emotional responses to stimuli, and therefore weight emotion more greatly in responding to stimuli. In models of categorization and category learning (e.g., Kruschke, 1992; Medin & Schaffer, 1978; Nosofsky, 1986, 1992; Smith 1989), selective attention towards a particular feature of a stimulus decreases attention to other features of the stimulus. If one is attending to the emotional significance of an object, one is not attending to its other features. Due to this attention being allocated toward a stimulus’ emotional value and away from its discrete features, Niedenthal, Innes-Ker and Halberstadt (1999) claim that one is more likely to perceive stimuli as more similar when in an emotional state. This suggests that individuals in both a positive and negative mood condition will perceive a CS+ and CS- as being more similar than individuals in a control condition and will show decreased discrimination.

Running counter to the predictions of this theory, prior research has linked low amounts of positive affect with decreased ability to discriminate (Meulders, Meulders, & Vlaeyen, 2014). This study examined whether positive affect and trait anxiety impact fear inhibition to a neutral stimulus during extinction. Results

indicated that individuals who show low levels of positive affect show failure of fear inhibition to the CS-. Additionally, trait anxiety was associated with elevated fear in response to the CS-. Importantly, this study examined trait positive affect rather than state positive affect. This study suggests that individuals experiencing less positive emotion are less likely to discriminate successfully between an CS+ and a CS-. It is possible that increased state positive affect may increase discrimination. Additionally, trait anxiety, or the tendency to experience the negative emotion of fear, may be related to decreased discrimination.

Based on this collection of evidence, it is possible that only negative mood induction will decrease discrimination and positive mood induction will have no impact, that a positive mood induction will facilitate discrimination and a negative mood induction will decrease discrimination, or that both positive and negative mood inductions will decrease discrimination. Thus, the aim of the current study is to examine the impact of positive, negative, and neutral mood inductions on the ability to discriminate between a CS+ and a CS-. Additionally, this study seeks to confirm a negative relationship between discrimination and fear following extinction, at spontaneous recovery, and at context renewal.

Study 3: Differential Brain Activation in Response to Neutral and Unsafe Stimuli and Extinction Learning and Recall

Fear conditioning activates a consistent network of brain regions or “fear network” (Fullana et al., 2016). Discrimination between neutral and unsafe stimuli may be related to areas in this network inhibiting responding to the CS-.

Alternatively, hyperresponsivity to the CS+ may be responsible for decreased discrimination.

In a meta analysis of neuroimaging studies of fear conditioning, Fullana et al. (2016) identified several areas that show greater deactivation in the presence of the CS- relative to the CS+, including (1) lateral and midline primary somatosensory cortex and dorsal posterior insular cortex, (2) dorsal anterior prefrontal cortex, (3) ventromedial prefrontal cortex, (4) posterior cingulate cortex, including the retrosplenial cortex, hippocampus and lateral inferior and middle temporal cortex; (5) lateral OFC, 6) inferior parietal cortex, (7) lateral retrosplenial cortex, (8) posterior cerebellum, (9) dorsal caudate nucleus, and (10) dorsal–posterior precuneus (Fullana et al., 2016). These regions are likely to be responsible for processing of the CS- as a nonthreatening signal (Fullana et al., 2016). Regions such as the hippocampus responsible for the encoding of episodic memory may be linked to the encoding of an episodic memory representation during processing of the CS- (Fullana et al., 2016). Alternatively, these regions may be associated with relief related to the absence of the US (Leknes, Lee, Berna, Andersson, & Tracey, 2011). Individuals who show impaired discrimination may show limited deactivation of these brain regions.

Regions that show significant functional activation when presented with the CS+ relative to the CS- included (1) the anterior insular cortex, (2) the ventral striatum and major thalamic nuclei, (3) pre-supplementary and supplementary motor areas, the dorsal anterior cingulate cortex and the dorsal–anterior precuneus, (4) the second somatosensory cortex/parietal operculum, (5) the dorsolateral

prefrontal cortex (6) the lateral premotor cortex, (7) the ventral–posterior precuneus, and (8) the lateral cerebellum. Overall, several of these regions reflect processes related to autonomic and behavioral regulation, including monitoring of the physiological condition of the body and subjective emotional awareness (Cameron, 2009; Craig, 2009; Critchley & Harrison, 2013; Saper, 2002). Among these regions, the anterior insular cortex and dorsal anterior cingulate cortex are hypothesized to be two major components, in which the anterior insular cortex is responsible for awareness of one's cognitive, emotional, and physical state which is conveyed to the dorsal anterior cingulate cortex in order to facilitate physiological and behavioral responses in the interest of homeostasis (Craig, 2009; Medford & Critchley, 2010). These areas may be hyperresponsive in individuals who show poor discrimination.

The amygdala is an important area in fear conditioning processes. Early animal research on the role of the amygdala in fear conditioning demonstrated its crucial role in fear learning. In one study, rats with lesions to the amygdala failed to avoid a CS and failed to show freezing behavior (Blanchard & Blanchard, 1972). Today, fear conditioning is known to depend on the central nucleus of the amygdala in rats (Zimmerman, Rabinak, McLachlan, & Maren, 2007). This structure has been shown to be necessary for learning not only about discrete stimuli but also contextual stimuli (Phillips & Ledoux, 1992). The amygdala is involved in both the learning of fear and the expression of fear responses in humans (Cheng, Knight, Smith, & Helmstetter, 2006). The amygdala shows increased activation in humans when an aversive event is predicted compared to when it is unpredictable (Carlsson et al., 2006) and regional cerebral blood flow to the amygdala is shown to increase

following conditioning (Doronbekov et al., 2005). Amygdala activation increases with the rate of reinforcement during fear conditioning; the more often the US follows the CS, the greater the amygdala activation (Dunsmoor, Bandettini, & Knight, 2007) For example, Cheng et al. (2003) found that subjects receiving paired CS-US presentations showed greater amygdala activity than those receiving unpaired shocks and CS presentations. It is important to note that the amygdala habituates quickly, thus responses toward the beginning of conditioning may be the most informative (Breiter et al., 1996). The amygdala is important for generating conditional responses (Cheng, Richards, & Helmstetter, 2007). Differential amygdala activity has been demonstrated during differential Pavlovian fear conditioning paradigms in animals (Collins & Paré, 2000) and humans (Buchel et al., 1998; Buchel et al., 1999; LaBar et al., 1998; Cheng, Knight, Smith, & Helmstetter, 2006) such that responding is increased during presentation of the CS+ relative to the CS-. Whether the magnitude of this difference is related to anxiety or predicts extinction and return of fear is unknown.

STUDY 1

DISCRIMINATION AS A MEDIATOR OF THE RELATIONSHIP BETWEEN TRAIT ANXIETY AND RETURN OF FEAR

Study 1 has been published in the journal Cognition and Emotion:

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Introduction

Abnormalities in basic fear conditioning and extinction processes may contribute to the development and maintenance of anxiety disorders. Exposure therapy for anxiety disorders applies principles of extinction learning to reduce symptoms and improve functioning. However, despite its well-established effectiveness, a portion of individuals do not respond and many who do respond experience symptom relapse following treatment (Vervliet, Craske, & Hermans, 2013). The relapse of symptoms may be due to several phenomena. For instance, following successful extinction learning, a resurgence of fear known as spontaneous recovery occurs over the passage of time, with full spontaneous recovery occurring at 14 days in rodent samples (Quirk, 2002). In a separate phenomenon known as context renewal, fear responding to a conditional stimulus (CS) returns when the CS is presented in a context other than the extinction context

(Bouton, 1993). These processes may explain 1) relapse in the weeks and months following exposure therapy and 2) the resurgence of symptoms when the individual is confronted with a previously feared stimulus in a novel environment. However, it is unclear what factors contribute to increased spontaneous recovery and context renewal in individuals with anxiety disorders.

In differential conditioning paradigms, which are an experimental analogue of fear acquisition, one CS (the CS+) predicts the unconditional stimulus (US) and the other (the CS-) predicts its absence. Discrimination between the CS+ and CS- is an index of associative processes and is measured by strength of fear responding (such as skin conductance) and strength of perceived association with the US (such as US expectancy).

Usually, non-anxious individuals successfully discriminate as evident by stronger fear arousal and US expectancy to the CS+ than the CS- . This discrimination is often used as an indicator of successful fear learning. Individuals with anxiety disorders, however, have shown deficits in the differentiation between CS+ and CS- and elevated threat responding to neutral cues (e.g., Duits et al., 2015; Jovanovic et al., 2013; Lissek et al., 2014). Additionally, individuals who are unaware of the relationship between the CS+ and the US show elevated state anxiety (Prenoveau, Craske, Liao, & Ornitz, 2011).

Superior discrimination has been associated with decreased return of conditional fear at spontaneous recovery (Grillon, 2002), but linkages between discrimination and context renewal remain unknown. On the one hand, greater discrimination between a CS+ and a CS- may lead to increased context renewal

due to enhanced observation of novel elements of contextual stimuli. Throughout extinction, the individual searches the environment for cues in order to resolve the ambiguity of the CS+ because the absence of the US violates its prior predictive association with the US (Bouton, 1993). Those who more easily discriminate between a CS+ and a CS- may show greater attention to novel elements of stimuli in general, which may in turn correspond with enhanced attention towards novel contextual elements during extinction, resulting in a stronger contextual representation. Enhanced attention to novel elements of stimuli and contexts may amplify the difference between the extinction context and a renewal context at test, leading to greater context renewal. On the other hand, individuals with greater discrimination may simply show greater attention toward the CS+ rather than greater attention to novel elements in general, thereby diverting attention from the surrounding environment and decreasing context renewal.

Previous research has examined the impact of trait anxiety on extinction learning (Indovina, Robins, Núñez-Elizalde, Dunn, & Bishop, 2011; Sehlmeyer et al., 2011), and impaired discrimination (Lissek et al., 2014), however the impact of trait anxiety on spontaneous recovery and context renewal is unknown. Previous studies have linked disorders of anxiety such as PTSD to return of extinguished fear memories, (e.g., Milad et al., 2009), however previous findings have failed to establish a link between trait anxiety and return of fear (Haaker et al., 2015).

The aim of the current study is to evaluate whether discrimination between the CS+ (cuing danger) and CS- (cuing the absence of danger) during fear acquisition mediates the relationship between trait anxiety and a) spontaneous

recovery and b) context renewal of fear. Given the evidence to suggest that anxiety is associated with impaired discrimination and that impaired discrimination is associated with increased spontaneous recovery, it is hypothesized that discrimination between the CS+ and CS- during acquisition mediates the relationship between trait anxiety and spontaneous recovery. Given the dearth of prior research, no specific hypotheses are made regarding the role of discrimination in the relationship between anxiety and context renewal. The current study utilizes data from an investigation examining the effect of multiple contexts during extinction. Thus, the findings represent secondary analyses.

Methods

Twenty-nine participants (mean age = 19.3 years, SD =1.47, 79% female, 37% Caucasian, 31% Asian, 24% Hispanic or Latino, 3% Other) were recruited from a student subject pool at a local university and received either monetary compensation or partial course credit for their participation. Participants were excluded if they were currently undergoing treatment for a psychiatric disorder other than an anxiety disorder, if they were pregnant, under the age of 18, unable to speak or understand English, or if they had a serious medical condition, hearing difficulties, or a physician's recommendation to avoid stressful situations.

Apparatus and Stimuli

Stimuli were presented on a desktop computer using E-prime software (Psychology Software Tools, Pittsburgh, PA). Each CS was a picture of one of two faces (one Asian female, one Caucasian male) selected from the NimStim set (Tottenham et al., 2009). The CS was superimposed on an image of a context (a

living room, a mall, a staircase, an outdoor seating area, or a laundry room). Context as well as which CS was selected as the CS+ versus the CS- were counterbalanced across participants. Each CS lasted 8 seconds and was presented in pseudo-random order, such that there were no more than two consecutive trials of either CS. The US was a 1-second 100 decibel scream presented via headphones that co-terminated with the CS+ (Joos, Vansteenwegen, & Hermans, 2012). Inter-trial intervals were set to 20, 25, and 30-seconds in randomized order, during which a fixation cross was displayed.

Measures

Participants completed the Behavioral Inhibition System scale (BIS; M=23.24, SD=2.86; Carver & White, 1994) as a measure of trait anxiety or vulnerability to anxiety. Additionally, they completed a demographics questionnaire and an eligibility questionnaire.

The primary dependent variables were ratings of US Expectancy and CS Fear, which are valid measures of fear conditioning (Boddez et al., 2013). Participants rated how certain they were that they would receive the US on each trial. Ratings were made using a box with a sliding switch. One end of the box was labeled “Certain Noise”, the opposite end was labeled “Certain No Noise”, and the middle was labeled “Uncertain”. These subjective responses were measured in arbitrary units; the software value default assigned to the far end of the dial labeled “Certain No Noise” was -29.6, the value assigned to the end of the dial labeled “Certain Noise” was 9.56, and the midpoint fell at -19.58. Data were centered for ease of interpretation. On each trial, participants were asked to rate how much they

expected to hear the scream sound in the next few moments. At the midpoint of each trial, participants received a prompt (i.e., the words “Scream Sound?”) at the bottom of the screen to remind them to continuously rate their expectancy of the US. US Expectancy was calculated by taking the maximum value of US Expectancy ratings during each trial. Discrimination (M=30.07, SD=13.67) during Acquisition was assessed by subtracting the average US Expectancy to the CS- from the average US Expectancy to the CS+ throughout Acquisition.

After each phase (Habituation, Acquisition, Extinction, Spontaneous Recovery, and Context Renewal – detailed below), participants rated each CS (without context) using a 7-point likert scale of Fear (1=very low fear, 7=very high fear). The original paradigm included a measure of skin conductance, but due to technical error, skin conductance data were not analyzable.

Procedure

On Day 1, participants provided informed consent and were instructed to sit at the computer where stimuli were presented. Participants were instructed that they would see various images and that they may hear a loud scream sound at certain times. The experimenter explained the US Expectancy ratings box and instructed participants to continuously rate the extent to which they expected to hear the scream sound. During Habituation, four presentations of each CS occurred in either the Acquisition context or the Extinction context, counterbalanced. No US Expectancy ratings were collected during Habituation to minimize development of an expectation of the US that would interfere with conditioning. During the Acquisition phase, the CS+ and the CS- were each presented 8 times in one of the

contexts, and the CS+ was always followed by the US. In the Extinction phase, participants viewed 24 presentations of the CS+ and the CS- in a context that differed from the Acquisition context. The initial study design compared two groups: a Control group (n=17) received only one context and a Multiple Context group (n=12) received three contexts during the Extinction phase. The groups did not significantly differ on CS Discrimination during Acquisition ($t(27)=-.916$, $p=.368$). Furthermore, the groups did not significantly differ on US Expectancy for CS+ at Spontaneous Recovery or Renewal, or US Expectancy for CS- at Extinction, Spontaneous Recovery, or Renewal (all p's >.052). However, since Groups were significantly different on US Expectancy for CS+ at Extinction ($t(27)=-2.158$, $p=.040$), Group was added as a covariate in all analyses.

Seven days later, participants returned to the laboratory for a second visit. They were instructed that throughout the experiment they may hear the scream sound at certain times. At this time, they completed questionnaires and were tested for Spontaneous Recovery, where they viewed four presentations each of the CS+ and the CS- in the Extinction context. For individuals who viewed multiple contexts during Extinction, the context presented during Spontaneous Recovery was the context presented during the final one third of Extinction trials. In the Context Renewal phase, participants viewed four presentations each of the CS+ and the CS- in a novel context. The order of these test phases was counterbalanced across participants.

Data Analytic Plan

We first analyzed data indicative of Acquisition, Extinction, Context Renewal and Spontaneous Recovery of expectancy and fear, using repeated measures ANOVA. US Expectancy was averaged over the first two trials of both Spontaneous Recovery and Context Renewal based upon previous research demonstrating this method as a dependable measure of return of fear (e.g., Hermann, Stark, Milad, & Merz, 2016).

We also assessed for order effects between Spontaneous Recovery and Context Renewal using repeated measures ANOVAs. To examine the relationship between trait anxiety and return of fear, correlations were performed between BIS and a) US Expectancy at Spontaneous Recovery, b) US Expectancy at Context Renewal, and c) Fear ratings following both Spontaneous Recovery and d) Context Renewal.

Next, we examined whether Discrimination mediated the relationship between trait anxiety (as measured by the BIS) and Spontaneous Recovery and Context Renewal using PROCESS, a conditional modeling program. This program utilizes an ordinary least squares framework to test direct and indirect effects (Hayes, 2012). The present analyses utilized PROCESS Model 4 and bootstrap analyses for mediation. Due to small sample size, bootstrap estimates used 50,000 repetitions to construct 95% bias-corrected confidence intervals. We utilized current methods for establishing mediation based upon MacKinnon and colleagues (MacKinnon, 2007; MacKinnon & Fairchild, 2009). This method allows demonstration of more nuanced mediation models such as inconsistent mediation

or indirect-only mediation (Zhao, Lynch, & Chen, 2010), in which mediation occurs in the absence of total effects.

Finally, for a more precise measure of Discrimination we recalculated Discrimination as CS+/(CS+ + CS-), which yields a 0 to 1 proportion. Mediation analyses were rerun with this recalculated Discrimination variable.

Results

Acquisition, Extinction, Spontaneous Recovery, and Context Renewal

Acquisition, Extinction, Spontaneous Recovery and Context Renewal were analyzed using a 2 (CS +, CS-) x 5 (Phase: beginning of Acquisition, end of Acquisition, end of Extinction, Context Renewal, and Spontaneous Recovery) repeated measures ANOVA. In instances were sphericity was violated, results are reported with the Greenhouse-Geisser correction. For US Expectancy, there was a main effect of phase ($F(2.67,72.04)=28.80$, $p<.001$, $\eta_p^2=.52$), CS type ($F(1,27)=82.82$, $p<.001$, $\eta_p^2=.75$) and a Phase X CS type interaction ($F(2.17,58.71)=59.21$, $p<.001$, $\eta_p^2=.69$; see Figure 1). Planned comparisons indicated a significant increase in US Expectancy to the CS+ from the beginning to the end of Acquisition, and a significant decrease in US Expectancy to the CS+ by the end of Extinction (all *ps*<.001). There was a significant return of fear to the CS+ and CS- from the end of Extinction to Renewal and Spontaneous Recovery (*p*s<.001). However, return of fear was specific, as responding was greater to the CS+ than the CS- in Context Renewal (*p*<.01) and trended in the same direction for Spontaneous Recovery (*p*=.055), and US Expectancy to the CS+ was higher during Renewal compared to Spontaneous Recovery (*p*<.05). For Fear ratings, there was

significant effect of phase (F(2.78,75.02)=9.41, p<.001, η_p^2 =.26), but no effect of CS type or phase by CS type interaction (*ps*>.50). Planned comparisons indicated a significant increase in fear to conditional stimuli from the beginning to the end of Acquisition, and a significant decrease in fear by the end of Extinction (all *ps*<.001). However, there was no significant renewal or spontaneous recovery of fear (*ps*>.30).

Order effects of Spontaneous Recovery versus Context Renewal were evaluated using a 2 (Order: Spontaneous Recovery First, Context Renewal First) X 2 (CS Type: CS+, CS-) repeated measures ANOVA. For both Context Renewal and Spontaneous Recovery, there was no main effect of order or significant Order X CS Type interaction (*ps*>.14). There was also no difference in acquisition, extinction, or test phases between participants who underwent habituation in the acquisition context versus the extinction context (all p's > .213).

Mediation Analyses

(a) CS+ US Expectancy.

Discrimination during Acquisition was significantly negatively correlated with US Expectancy at Spontaneous Recovery (r(29)=-.57, p=.001) and Context Renewal (r(29)=-.442, p=.02. BIS was not significantly correlated with US Expectancy at Spontaneous Recovery (r(29)=.20, p=.297) or Context Renewal (r(29)=.02, p=.924). However, given that a significant total effect is not necessary to demonstrate mediation, we proceeded with mediation analyses (MacKinnon & Fairchild, 2009).

Statistics for all mediation analyses are listed in Tables 1 and 2 (see supplemental materials). BIS significantly predicted Discrimination and, when controlling for BIS, Discrimination significantly predicted US Expectancy at Spontaneous Recovery and Context Renewal. All total effects were nonsignificant. Direct effects of BIS on Spontaneous Recovery and Context Renewal were nonsignificant, indicating full mediation of Discrimination on these relationships.

(b) CS- US Expectancy.

Discrimination was significantly negatively correlated with US Expectancy at Spontaneous Recovery ($r(29)=-.62$, $p<.001$) and Context Renewal ($r(29)=-.50$, $p<.001$). BIS was not significantly correlated with US Expectancy at Spontaneous Recovery ($r(29)=.18$, $p=.345$) or Context Renewal ($r(29)=.08$, $p=.691$).

BIS significantly predicted Discrimination and, when controlling for BIS, Discrimination significantly predicted US Expectancy at Spontaneous Recovery and Context Renewal. All total effects were nonsignificant. Direct effects of BIS on Spontaneous Recovery and Context Renewal were nonsignificant, indicating full mediation of Discrimination on these relationships.

(c) Fear Ratings to the CS+.

Discrimination was significantly negatively correlated with fear ratings at Spontaneous Recovery ($r(29)=-.52$, $p=.004$) and Context Renewal ($r(29)=-.57$, $p=.001$). BIS was not significantly correlated with fear ratings following Spontaneous Recovery ($r(29)=.10$, $p=.611$) or Context Renewal ($r(29)=.13$, $p=.499$).

BIS significantly predicted Discrimination and, when controlling for BIS, Discrimination significantly predicted fear ratings to the CS+ at Spontaneous

Recovery and Context Renewal. Again, all total effects were nonsignificant. The direct effects of BIS on Spontaneous Recovery and Context Renewal were nonsignificant, indicating full mediation.

(d) Fear Ratings to the CS-.

Discrimination was negatively correlated with fear ratings at Spontaneous Recovery ($r(29)=-.52$, $p=.004$) and Context Renewal ($r(29)=-.53$, $p=.003$). BIS was not correlated with fear ratings following Spontaneous Recovery ($r(29)=.03$, $p=.873$) or Context Renewal ($r(29)=.09$, $p=.643$).

BIS significantly predicted Discrimination and, when controlling for BIS, Discrimination significantly predicted fear ratings to the CS- at Spontaneous Recovery and Context Renewal. Again, all total effects were nonsignificant. The direct effects of BIS on Spontaneous Recovery and Context Renewal were nonsignificant, indicating full mediation.

Figure 1.

Mediation of the relationship between BIS and US Expectancy at Spontaneous Recovery.

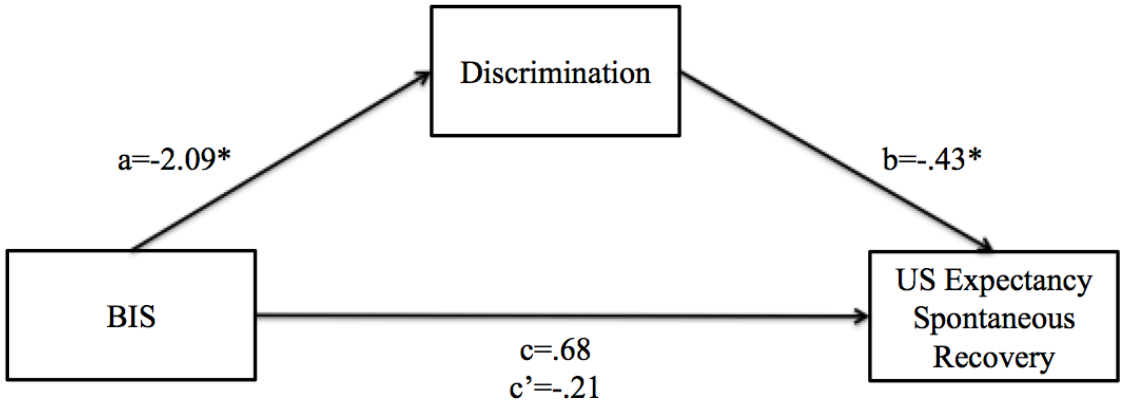


Figure 2.

Changes in US Expectancy demonstrating fear acquisition, extinction, spontaneous recovery, and context renewal.

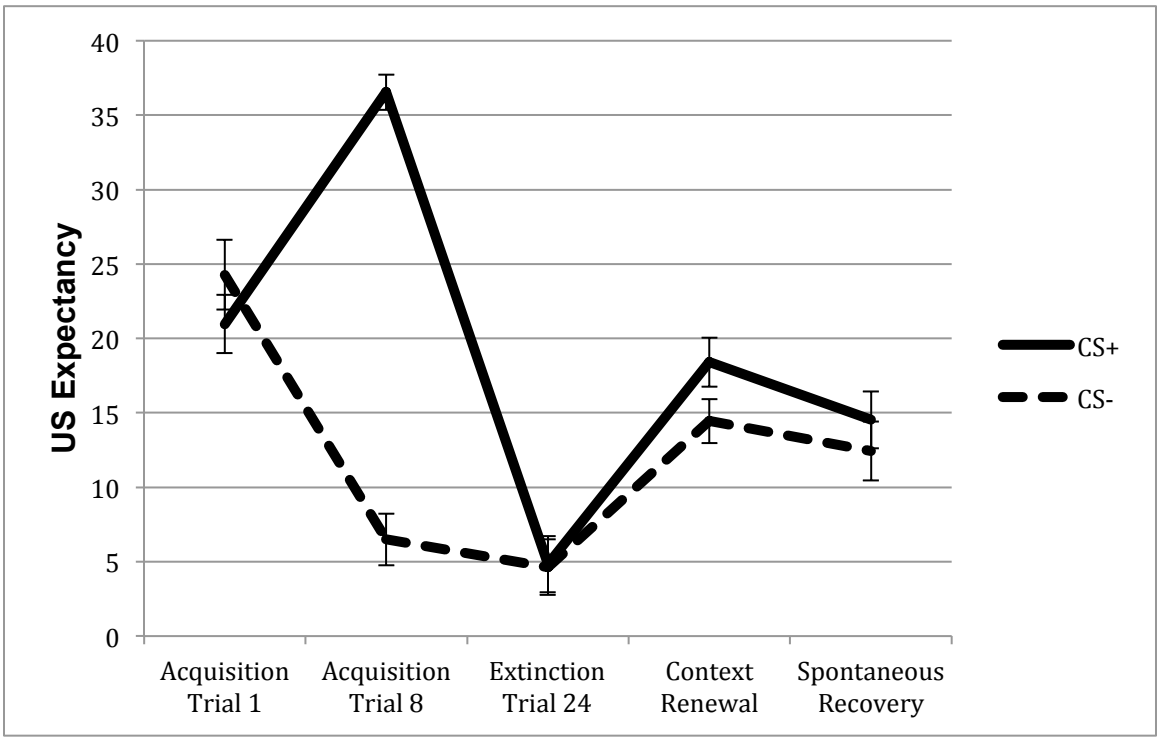


Table 1.

US Expectancy Ratings: Analyses of discrimination mediating the relationship between Behavioral Inhibition System (BIS) scores and Spontaneous Recovery (SR) and Context Renewal (CR). LLCI=Lower Limit 95% Confidence Interval, ULCI = Upper Limit 95% Confidence Interval.

	b	SE	LLCI	ULCI	sig
A Path					
BIS → Discrimination (a path)	-2.09	.83	-3.80	-.40	*
US Expectancy during CS+					
Spontaneous Recovery					
Discrimination → SR (b path)	-.43	.14	-.71	-.14	*
BIS →Discrimination → SR (Indirect Effect)	.89	.38	.29	1.79	*
BIS→ SR (Direct Effect)	-.21	.65	-1.54	1.12	
BIS→ SR (Total Effect)	.68	.67	-.69	2.06	

Context Renewal					
Discrimination → CR (b path)	-.31	.12	-.56	-.06	*
BIS → Discrimination → CR (Indirect Effect)	.66	.26	.23	1.27	*
BIS→ CR (Direct Effect)	-.65	.57	-1.82	.53	
BIS→ CR (Total Effect)	.01	.56	-1.15	1.17	
US Expectancy during CS-					
Spontaneous Recovery					
Discrimination → SR (b path)	-.51	.14	-.80	-.23	*
BIS → Discrimination → SR (Indirect Effect)	1.08	.45	.35	2.16	*
BIS→ SR (Direct Effect)	-.42	.65	-1.77	.92	
BIS→ SR (Total Effect)	.66	.71	-.81	2.12	
Context Renewal					
Discrimination → CR (b path)	-.32	.11	-.54	-.09	*
BIS → Discrimination → CR (Indirect Effect)	.67	.29	.20	1.37	*
BIS→ CR (Direct Effect)	-.48	.51	-1.54	.58	
BIS→ CR (Total Effect)	.18	.52	-.89	1.25	

Table 2.

Fear Ratings: Analyses of discrimination mediating the relationship between Behavioral Inhibition System (BIS) scores and Spontaneous Recovery (SR) and Context Renewal (CR). LLCI=Lower Limit 95% Confidence Interval, ULCI = Upper Limit 95% Confidence Interval.

	b	SE	LLCI	ULCI	sig
CS+ Fear Ratings					
A Path					
BIS → Discrimination (a path)	-2.10	.83	-3.80	-.40	*
Spontaneous Recovery					
Discrimination → SR (b path)	-.07	.02	-.12	-.03	*
BIS → Discrimination → SR (Indirect Effect)	.15	.06	.05	.31	*
BIS→ SR (Direct Effect)	-.10	.11	-.32	.12	
BIS→ SR (Total Effect)	.06	.11	-.18	.29	
Context Renewal					

Discrimination → CR (b path)	-.08	.02	-.12	-.03	*
BIS →Discrimination → CR (Indirect Effect)	.16	.07	.06	.32	*
BIS→ CR (Direct Effect)	-.09	.10	-.30	.12	
BIS→ CR (Total Effect)	.07	.11	-.15	.30	
CS- Fear Ratings					
Spontaneous Recovery					
Discrimination → SR (b path)	-.07	.02	-.12	-.03	*
BIS →Discrimination → SR (Indirect Effect)	.15	.07	.04	.30	*
BIS→ SR (Direct Effect)	-.14	.10	-.35	.07	
BIS→ SR (Total Effect)	.01	.11	-.21	.24	
Context Renewal					
Discrimination → CR (b path)	-.07	.02	.-12	-.03	*
BIS →Discrimination → CR (Indirect Effect)	.15	.06	.05	.29	*
BIS→ CR (Direct Effect)	-.10	.10	-.32	.11	
BIS→ CR (Total Effect)	.05	.11	-.18	.27	

Results: Secondary Mediation Analysis Recalculating Discrimination

(e) CS+ US Expectancy.

Recalculated Discrimination during Acquisition was significantly negatively correlated with US Expectancy at Spontaneous Recovery ($r(29)=-.60$, $p=.001$) and Context Renewal ($r(29)=-.48$, $p=.008$). BIS was not significantly correlated with US Expectancy at Spontaneous Recovery ($r(29)=.20$, $p=.297$) or Context Renewal ($r(29)=.02$, $p=.924$). However, given that a significant total effect is not necessary to demonstrate mediation, we proceeded with mediation analyses (MacKinnon & Fairchild, 2009).

Statistics for all mediation analyses are listed in Tables 3 and 4. BIS significantly predicted Recalculated Discrimination and, when controlling for BIS, Recalculated Discrimination significantly predicted US Expectancy at Spontaneous Recovery and Context Renewal. All total effects were nonsignificant. Direct effects

of BIS on Spontaneous Recovery and Context Renewal were nonsignificant, indicating full mediation of Recalculated Discrimination on these relationships.

(f) CS- US Expectancy.

Recalculated Discrimination was significantly negatively correlated with US Expectancy at Spontaneous Recovery ($r(29)=-.64$, $p<.001$) and Context Renewal ($r(29)=-.49$, $p=.007$). BIS was not significantly correlated with US Expectancy at Spontaneous Recovery ($r(29)=.18$, $p=.345$) or Context Renewal ($r(29)=.08$, $p=.691$).

BIS significantly predicted Recalculated Discrimination and, when controlling for BIS, Recalculated Discrimination significantly predicted US Expectancy at Spontaneous Recovery and Context Renewal. All total effects were nonsignificant. Direct effects of BIS on Spontaneous Recovery and Context Renewal were nonsignificant, indicating full mediation of Recalculated Discrimination on these relationships.

(g) Fear Ratings to the CS+.

Recalculated Discrimination was significantly negatively correlated with fear ratings at Spontaneous Recovery ($r(29)=-.53$, $p=.003$) and Context Renewal ($r(29)=-.58$, $p=.001$). BIS was not significantly correlated with fear ratings following Spontaneous Recovery ($r(29)=.10$, $p=.611$) or Context Renewal ($r(29)=.13$, $p=.499$).

BIS significantly predicted Recalculated Discrimination and, when controlling for BIS, Recalculated Discrimination significantly predicted fear ratings to the CS+ at Spontaneous Recovery and Context Renewal. Again, all total effects were

nonsignificant. The direct effects of BIS on Spontaneous Recovery and Context Renewal were nonsignificant, indicating full mediation.

(h) Fear Ratings to the CS-.

Recalculated Discrimination was negatively correlated with fear ratings at Spontaneous Recovery ($r(29)=-.50$, $p=.006$) and Context Renewal ($r(29)=-.53$, $p=.003$). BIS was not correlated with fear ratings following Spontaneous Recovery ($r(29)=.03$, $p=.873$) or Context Renewal ($r(29)=.09$, $p=.643$).

BIS significantly predicted Recalculated Discrimination and, when controlling for BIS, Recalculated Discrimination significantly predicted fear ratings to the CS- at Spontaneous Recovery and Context Renewal. Again, all total effects were nonsignificant. The direct effects of BIS on Spontaneous Recovery and Context Renewal were nonsignificant, indicating full mediation.

Table 3.

US Expectancy Ratings: Analyses of Recalculated Discrimination mediating the relationship between Behavioral Inhibition System (BIS) scores and Spontaneous Recovery (SR) and Context Renewal (CR). LLCI=Lower Limit 95% Confidence Interval, ULCI = Upper Limit 95% Confidence Interval.

	b	SE	LLCI	ULCI	sig
A Path					
BIS → Discrimination (a path)	-.03	.01	-.05	-.01	*
US Expectancy during CS+					
Spontaneous Recovery					

Recalculated Discrimination → SR (b path)	-36.12	10.31	-57.34	-14.89	*
BIS →Recalculated Discrimination → SR (Indirect Effect)	1.14	.43	.41	2.14	*
BIS→ SR (Direct Effect)	-.46	.65	-1.79	.87	
BIS→ SR (Total Effect)	.68	.67	-.69	2.06	
Context Renewal					
Recalculated Discrimination → CR (b path)	-28.07	8.99	-46.59	-9.54	*
BIS → Recalculated Discrimination → CR (Indirect Effect)	.89	.30	.38	1.61	*
BIS→ CR (Direct Effect)	-.87	.56	-2.04	.29	
BIS→ CR (Total Effect)	.01	.56	-1.15	1.17	
US Expectancy during CS-					
Spontaneous Recovery					
Recalculated Discrimination → SR (b path)	-42.80	10.33	-64.08	-21.51	*
BIS →Recalculated Discrimination → SR (Indirect Effect)	1.35	.53	.48	2.58	*
BIS→ SR (Direct Effect)	-.69	.65	-2.03	.64	
BIS→ SR (Total Effect)	.66	.71	-.81	2.12	
Context Renewal					
Recalculated Discrimination → CR (b path)	-24.75	8.50	-42.25	-7.25	*
BIS →Recalculated Discrimination → CR (Indirect Effect)	.78	.34	.21	1.58	*
BIS→ CR (Direct Effect)	-.60	.53	-1.70	.50	
BIS→ CR (Total Effect)	.18	.52	-.89	1.25	

Table 4.

Fear Ratings: Analyses of Recalculated Discrimination mediating the relationship between Behavioral Inhibition System (BIS) scores and Spontaneous Recovery (SR) and Context Renewal (CR). LLCI=Lower Limit 95% Confidence Interval, ULCI = Upper Limit 95% Confidence Interval.

	b	SE	LLCI	ULCI	sig
CS+ Fear Ratings					
A Path					
BIS → Recalculated Discrimination (a path)	-.03	.01	-.05	-.01	*

Spontaneous Recovery					
Recalculated Discrimination → SR (b path)	-5.96	1.75	-9.56	-2.35	*
BIS →Recalculated Discrimination → SR (Indirect Effect)	.19	.08	.07	.38	*
BIS→ SR (Direct Effect)	-.13	.11	-.36	.09	
BIS→ SR (Total Effect)	.06	.11	-.18	.29	
Context Renewal					
Recalculated Discrimination → CR (b path)	-6.37	1.66	-9.80	-2.95	*
BIS →Recalculated Discrimination → CR (Indirect Effect)	.20	.08	.08	.38	*
BIS→ CR (Direct Effect)	-.13	.10	-.34	.09	
BIS→ CR (Total Effect)	.07	.11	-.15	.30	
CS- Fear Ratings					
Spontaneous Recovery					
Recalculated Discrimination → SR (b path)	-5.56	1.71	-9.08	-2.04	*
BIS →Recalculated Discrimination → SR (Indirect Effect)	.18	.08	.05	.35	*
BIS→ SR (Direct Effect)	-.16	.11	-.38	.06	
BIS→ SR (Total Effect)	.01	.11	-.21	.24	
Context Renewal					
Recalculated Discrimination → CR (b path)	-5.62	1.72	-9.16	-2.09	*
BIS →RecalculatedDiscrimination → CR (Indirect Effect)	.18	.07	.06	.35	*
BIS→ CR (Direct Effect)	-.13	.11	-.35	.09	
BIS→ CR (Total Effect)	.05	.11	-.18	.27	

Discussion

Overall, this study confirms previous findings showing that individuals high in anxiety show impairments in discrimination between neutral and threatening stimuli. It extends upon those findings by demonstrating that impaired discrimination mediates the relationships between trait anxiety and phenomena that are related to the return of fear – spontaneous recovery and context renewal.

Individuals with higher trait anxiety, measured using the Behavioral Inhibition System scale, displayed impaired ability to distinguish between a CS+ and a CS- during fear conditioning. This effect is consistent with previous studies which demonstrate impairments in discrimination between neutral and threatening stimuli among individuals with anxiety disorders (e.g., Lissek et al., 2014).

At spontaneous recovery, discrimination during fear acquisition was negatively correlated with US expectancy and fear ratings to the CS+. This effect is consistent with previous findings that poor associative distinction between a CS+ and a CS- is associated with greater return of fear (Grillon, 2002). Discrimination was also negatively correlated with US expectancy and fear to the CS- at spontaneous recovery, further suggesting that individuals with poor discrimination have impaired learning of the neural properties of the CS-. Discrimination during acquisition mediated the relationships between trait anxiety and US Expectancy and fear to both the CS+ and CS- at spontaneous recovery. Conceivably, discrimination mediates between trait anxiety and spontaneous recovery because better discrimination reflects greater attentional control, which enhances the salience of the CS+, and in turn leads to more robust extinction learning and less return of fear. Indeed, attentional allocation can impact the rate of fear extinction (Barry, Vervliet, & Hermans, 2016). Furthermore, individuals with anxiety show deficits in attentional control (Eysenck, 2010), and individuals with less self-reported attentional control show impaired contingency awareness in context conditioning (Baas, 2013).

At context renewal, discrimination during acquisition was also negatively associated with US expectancy and fear ratings to the CS+, suggesting attenuated context renewal among individuals who more successfully discriminate during fear acquisition. Individuals who discriminated poorly also showed increased US expectancy and fear in response to the CS- at context renewal. Discrimination mediated the relationship between trait anxiety and US Expectancy and fear ratings

to both the CS+ and CS- at context renewal. Attenuated context renewal in individuals who successfully discriminate, characteristic of those with lower trait anxiety, may reflect greater attention to conditional stimuli compared to the surrounding environment, thereby reducing the association of the conditional stimuli and the extinction context. Reduced contextualization of extinction learning may allow extinction to generalize more readily across contexts, mitigating context renewal. An alternative explanation is that individuals with “poor discrimination” are generally more reactive to experimental stimuli following US delivery. However, that CS+ expectancy was greater than CS- expectancy at both spontaneous recovery and context renewal suggests that deficits in discrimination are due to associative processes rather than simple reactivity to study stimuli. Further evidence for associative mechanisms is derived from higher US expectancy ratings during the context renewal phase when compared to spontaneous recovery. If impaired discrimination was simply related to greater overall reactivity, we would not expect to see differences consistent with associative learning such as differential expectancy to the CS+ compared to CS-, and greater context renewal compared to spontaneous recovery.

The mediation effects occurred in the absence of total effects (i.e., the direct correlation between BIS and each outcome). This can occur when a) the sign of the indirect effect differs from the sign of the direct effect, resulting in the total effect equaling zero (inconsistent mediation; MacKinnon, Fairchild, & Fritz, 2007; MacKinnon & Fairchild, 2009), b) when additional unexplored mediators that differ in the direction from the current indirect effect result in no total direct effect (Hayes,

2009), or c) when there is “indirect-only” mediation (Zhao et al., 2010). Regardless, recent statistical techniques allow for a more nuanced examination of indirect effects such as the full mediation of trait anxiety on fear renewal through discrimination examined in the current study.

The present study has some important limitations. First, it is possible that the contexts utilized did not adequately simulate contexts in fear learning. Processing context may be hippocampus dependent while processing a CS is not (Huff et al., 2011). Evidence that the hippocampus is necessary for processing context is not, however, evidence that it is sufficient for processing context. When the hippocampus is damaged, for example, compensating structures acquire learning about simple, elemental cues, and minimum processing time is necessary for context conditioning to occur but not for elemental cues (Wiltgen, Sanders, Anagnostaras, Sage, & Fanselow, 2006). Therefore, one way to determine whether study stimuli represented contexts or discrete cues is to determine whether a minimum processing time is necessary for conditioning to occur. The present study did not make this determination.

Additional limitations included small sample size. Psychophysiological measurements were not analyzed due to technical error. Because spontaneous recovery and context renewal fear ratings were taken at the end of each test phase during which re-extinction had taken place, these measures failed to capture peak fear and return of fear was not demonstrated. However, these ratings provided enough variance for discrimination to predict, and fear ratings following re-extinction are still informative. While attentional control is one proposed mechanism of

impaired discrimination, attentional control was not directly assessed. Future research should investigate the relationship between discrimination and attentional control, perhaps by using eye tracking to measure of attention during differential fear conditioning paradigms. Additionally, generalization of the findings to clinical samples warrants investigation. Finally, future studies should investigate whether discrimination can be trained in highly anxious individuals and whether this impacts fear extinction and return of fear.

In sum, this study demonstrates that the ability to distinguish between neutral and threatening stimuli is an important mechanism through which trait anxiety impacts return of fear. It is the first study to show this mediation and is the first study to directly investigate the impact of trait anxiety on spontaneous recovery and context renewal.

STUDY 2

MOOD INDUCTION, DISCRIMINATION, AND RETURN OF FEAR

Introduction

Decreased ability to distinguish between a CS+ and a CS- during fear acquisition has been linked with anxiety (e.g., Jovanovic et al., 2013; Lissek et al., 2014), however the factors impacting this ability are unknown. One factor impacting CS+/CS- discrimination may be the mood state of the individual. State affect may influence certain processes within fear conditioning. Previous research has examined whether induction of positive mood can impact fear conditioning,

suggesting that mood induction before extinction learning reduces reinstatement of fear (Zbozinek, Holmes, & Craske, 2015). It is thought that positive mood induction activates brain regions that are important for extinction learning such as ventromedial/medial prefrontal cortex and anterior cingulate cortex (Phan, Wager, Taylor, & Liberzon, 2002). Trait positive affect may aid in preventing overgeneralization of fear and may bolster the effects of exposure treatment (Meulders, Meulders, & Vlaeyen, 2014). Low levels of trait positive affect have been associated with a decrease in discrimination between neutral and unsafe stimuli (Meulders, Meulders & Vlaeyen, 2014). However, whether positive mood induction prior to conditioning affects generalization of fear to neutral stimuli is unknown.

It has been demonstrated that stress exposure decreases eyeblink conditional discrimination (Wolf, Soria Bauser, & Daum, 2012), however whether this effect can be attributed to induction of negative affect is unclear. Additionally, whether the impact of positive versus negative mood induction on discrimination differs has not yet been studied. Emotional response categorization theory predicts that, when in an emotional state, individuals will view emotionally valenced stimuli as more similar (Niedenthal, Halberstadt, & Innes-Ker, 1999). This is supported by Cavanagh and Davey (2001), who found that individuals both in positive and negative mood induction groups overestimated the likelihood that a US would occur.

The present study seeks to determine whether mood induction prior to conditioning may affect discrimination learning and thereby impact extinction, spontaneous recovery, and context renewal. We present two competing

hypotheses: First, negative mood induction may impair discrimination, in line with prior research that stress induction is associated with decreased discrimination (Wolf, Soria Bauser, & Daum, 2012). Additionally, prior research has linked low positive affect with decreased ability to discriminate (Meulders, Meulders, & Vlaeyen, 2014); it is possible that increased state positive affect may increase discrimination. Alternatively, both negative and positive mood inductions may impair discrimination, in line with emotional response categorization theory (Niedenthal, Halberstadt, & Innes-Ker, 1999), which predicts that any state of emotional arousal will lead individuals to perceive emotionally valenced stimuli as more similar.

Method

Participants

Participants were undergraduate volunteers who received course credit. Participants were excluded under the following conditions: presence of a serious medical condition, current treatment for a psychiatric disorder other than an anxiety disorder, pregnancy, inability to speak or understand the English language, age below 18, hearing difficulties, clinically significant depression (BDI>17), or a physician's recommendation to avoid stressful situations.

Apparatus and Stimuli

A picture of a Caucasian male and an Asian female from the NimStim set (Tottenham et al., 2009) served as CS's. Stimuli were presented within a white backdrop. Three contexts were used: a "red room", a "green room," and a "blue room". Contexts were represented by changing a colored backdrop behind the

computer, a colored light providing ambient light, ambient noise (city noises, ocean noises, rainforest noises), and objects placed on the desk such as vases and plants. Habituation and Acquisition were completed in Context A, Extinction was completed in Context B, Spontaneous Recovery was completed in Context B, and Context Renewal was completed in a novel Context C. Both context selection and selection of which face served as the CS+/CS- were counterbalanced. Each CS was presented for 8 seconds and coterminated with the US, which was a 1-second scream sound (100 decibels). Stimuli were presented using E-prime software (Psychology Software Tools, Inc). Participants were randomized to one of three conditions: a positive mood induction, negative mood induction, or neutral condition. Mood inductions consisted of 12 commercials designed to elicit positive, negative, or neutral affect.

Measures

Participants initially completed the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), however one item regarding suicidal ideation was omitted. Participants also completed the Behavioral Inhibition System and Behavioral Activation System scales (BIS/BAS), which measure nervous anticipation of aversive stimuli, responsiveness to reward, and drive (Carver & White, 1994). The Positive and Negative Affect Scale- Expanded Form (PANAS-X), which measures trait or state experiences of positive and negative affect was

administered initially and following mood induction (Watson, Clark, & Tellegen, 1988). Finally, a demographics and eligibility questionnaire was administered.

Participants provided several subjective ratings throughout the experiment. To provide US Expectancy ratings, participants used a sliding switch with “Certain Noise” on one end, “Certain No Noise” on the other, and “Uncertain” in the center. Participants continuously rated the extent to which they expected to hear the US in the next few moments, and were instructed to move the switch any time their expectancy changed. After each phase, participants provided ratings of fear, valence, and arousal in response to each CS on a 0 to 7 likert scale (7= most fear, most positive valence, highest arousal).

Skin conductance response (SCR) was measured using a Biopac MP150 unit and Acqknowledge 4.3 software (Biopac Systems, Inc., Goleta, CA). Two disposable EDA Isotonic Gel electrodes were placed on the intermediate phalanx of the index and middle fingers of the non-dominant hand. Baseline SCRs were calculated as the average skin conductance (measured in microsiemens) during the 2 seconds prior to CS presentation, with the peak calculated as the maximum skin conductance 1-6 seconds after CS onset. SCRs were range-corrected using the highest SCR to the US. Two disposable 1cm Ag-AgCl ECG electrodes were placed to monitor participant heart rate. The positive electrode was placed at the bottom-most rib on the participant’s left side and the negative electrode was placed beneath the collarbone of the participant’s right side. Data were acquired at 1000 samples per second at a line frequency of 60 hz.

Procedure

Study procedures included two visits seven days apart. On Day 1, participants initially provided informed consent. They were instructed to sit in front of a computer monitor, and electrodes to measure SCR and heart rate were attached. Participants were then shown the expectancy ratings dial and instructed to rate the extent to which they expected to hear the US in the next few moments, and move the dial any time their expectancy changed. The task began with a 2-minute adjustment period, during which a white screen was presented. Next, the Habituation phase was presented, during which each CS was presented 2 times in the absence of the US. Throughout the experiment, all CSs were presented in random order with the caveat that no stimulus was ever presented more than twice in a row. To eliminate impact of ratings on US expectancy prior to acquisition, no expectancy ratings were collected during Habituation. Participants then completed questionnaires including the BDI, BISBAS, a demographics questionnaire, and the PANAS-X as an index of baseline mood. Participants then viewed 12 commercials from one of three conditions: Positive mood induction, Negative mood induction, or Neutral. Participants will again complete the PANAS-X as an index of mood following the mood induction. Participants then completed the Acquisition phase. During the Acquisition phase, each CS was presented 8 times and the CS+ was always followed by the US. Participants completed the PANAS-X a third time at this stage. During the Extinction phase, each CS was presented 12 times and no USs were presented. Participants again completed the PANAS-X following Extinction.

On Day 8, electrodes were placed again and participants placed the headphones around their ears. Participants completed the PANAS-X. They were

reminded how to use the ratings box, and the 2-minute baseline period was repeated. The Spontaneous Recovery and Context Renewal periods followed, and the order of these phases was counterbalanced. During Spontaneous Recovery, each CS was presented four times in the same context where Extinction took place. During Context Renewal, each CS was presented four times in a novel context.

Analyses

We examined whether groups differed on BDI, BIS, and age using one-way ANOVA. Skin conductance values were range-corrected to the maximum SCR to the US and square-root transformed. Heart rate was range-corrected to the mean heart rate during Habituation. The average of the first 2 trials of Context Renewal and Spontaneous Recovery were used. A 2 (CS type: CS+, CS-) x 5 (Phase: Beginning of Acquisition, End of Acquisition, End of Extinction, Spontaneous Recovery, Context Renewal) repeated measures ANOVA assessed for differential acquisition, extinction, spontaneous recovery, and context renewal. To assess for mood induction, a paired samples t test was run comparing the PANAS-X pre-mood induction to the PANAS-X post mood induction within each group.

Discrimination was calculated as CS+/(CS+ + CS-). To assess whether discrimination was related to Extinction, Spontaneous Recovery, and Context renewal, correlations between discrimination and a) Extinction, b) Spontaneous Recovery, and c) Context Renewal were run. One-way ANOVAs were used to assess whether groups differed on discrimination and Extinction, Spontaneous Recovery, and Context Renewal.

Using PROCESS, a conditional modeling program which utilizes an ordinary least squares framework to test direct and indirect effects, we assessed whether discrimination mediates the relationship between group and 1) Extinction, 2) Spontaneous Recovery, and 3) Context Renewal (Hayes, 2012). The present analyses utilized PROCESS Model 4 and bootstrap analyses for mediation. Bootstrap estimates used 50,000 repetitions to construct 95% bias-corrected confidence intervals. Also using PROCESS, we examined whether discrimination mediates the relationship between change in the PANAS-X from Pre-mood induction to Post-mood induction and 1) Extinction, 2) Spontaneous Recovery, and 3) Context Renewal. Finally, correlations were run between PANAS-X scores at the end of Extinction and on Day 8 to determine whether they correlate with SCR, Heart Rate, US Expectancy, and Fear, Valence, and Arousal ratings following Extinction and at Spontaneous Recovery or Context Renewal.

Follow up analyses included correlations to examine whether discrimination is associated with positive or negative mood change from the beginning of Acquisition to the end of Acquisition. Follow up mediation analyses assessed whether discrimination mediated between mood change from the beginning of Acquisition to the end of Acquisition and Extinction, Context Renewal, and Spontaneous Recovery

Results

Questionnaires and Age

Differences between groups on questionnaires and age were assessed using one-way ANOVA. Groups did not significantly differ on BDI ($F(2,91)=.191$, $p=.826$), BIS ($F(2,91)=1.300$, $p=.278$), or Age ($F(2,91)=.479$, $p=.621$).

Acquisition, Extinction, Spontaneous Recovery, and Context Renewal

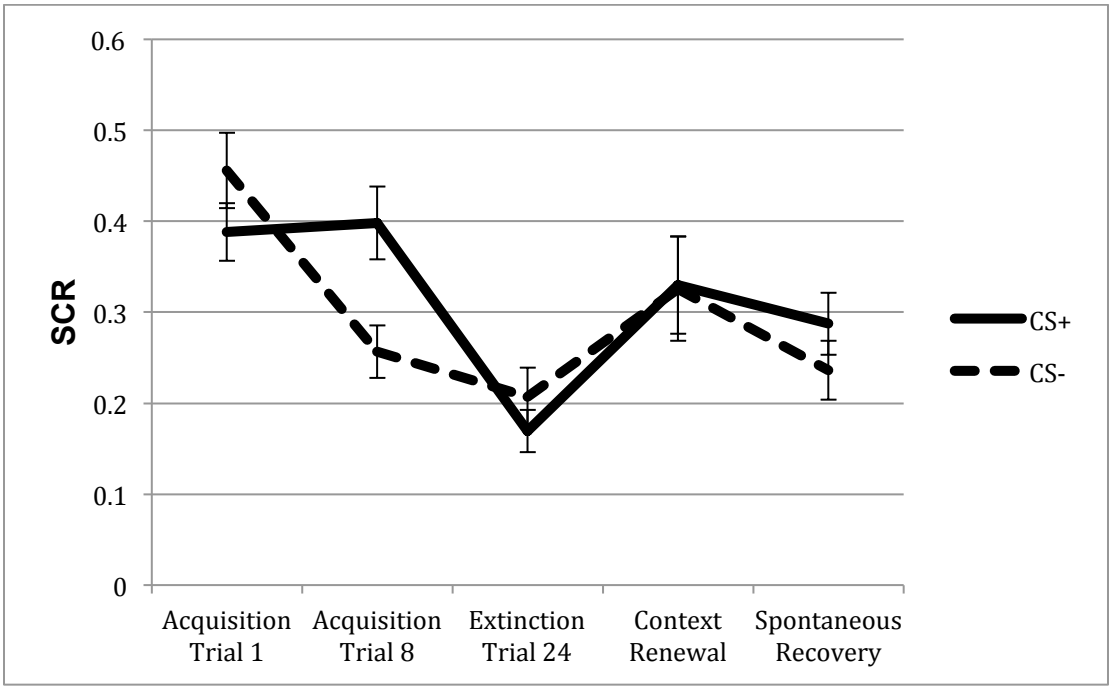
Acquisition, Extinction, Context Renewal, and Spontaneous Recovery were analyzed using a 2 (CS+, CS-) x 5 (Phase: beginning of Acquisition, end of Acquisition, end of Extinction, Context Renewal, and Spontaneous Recovery) repeated measures ANOVA. In instances where sphericity was violated, results are reported with the Greenhouse-Geisser correction.

Skin conductance.

For SCR, there was a main effect of phase ($F(2.799, 148.357)= 9.835$, $p<.001$, $\eta_p^2=.157$) and a Phase x CS type interaction ($F(2.049, .190)=2.622$, $p=.036$, $\eta_p^2 = .047$). There was no main effect of CS type ($F(1, 53)=3.963$, $p=.052$, $\eta_p^2 =.070$), however planned comparisons revealed that SCR to the CS+ (M=.304, SE=.026) was significantly higher than SCR to the CS- (M=.265, SE=.032) at the end of Acquisition ($p=.002$). Planned comparisons indicated no significant increase in SCR to the CS+ from the beginning to the end of Acquisition ($p=.401$), however there was a significant decrease in SCR to the CS+ between the end of Acquisition and the end of Extinction ($p<.001$). There was also a significant decrease in SCR to the CS+ between the beginning of Acquisition and the end of Extinction ($p<.001$). There was a significant return of fear to the CS+ from the end of Extinction to Renewal ($p=.006$) and Spontaneous Recovery ($p=.004$). Return of fear was specific,

as there was no significant return of fear to the CS- between the end of Extinction and Renewal (p=.071) or Spontaneous Recovery (p=.502).

Figure 1: SCR

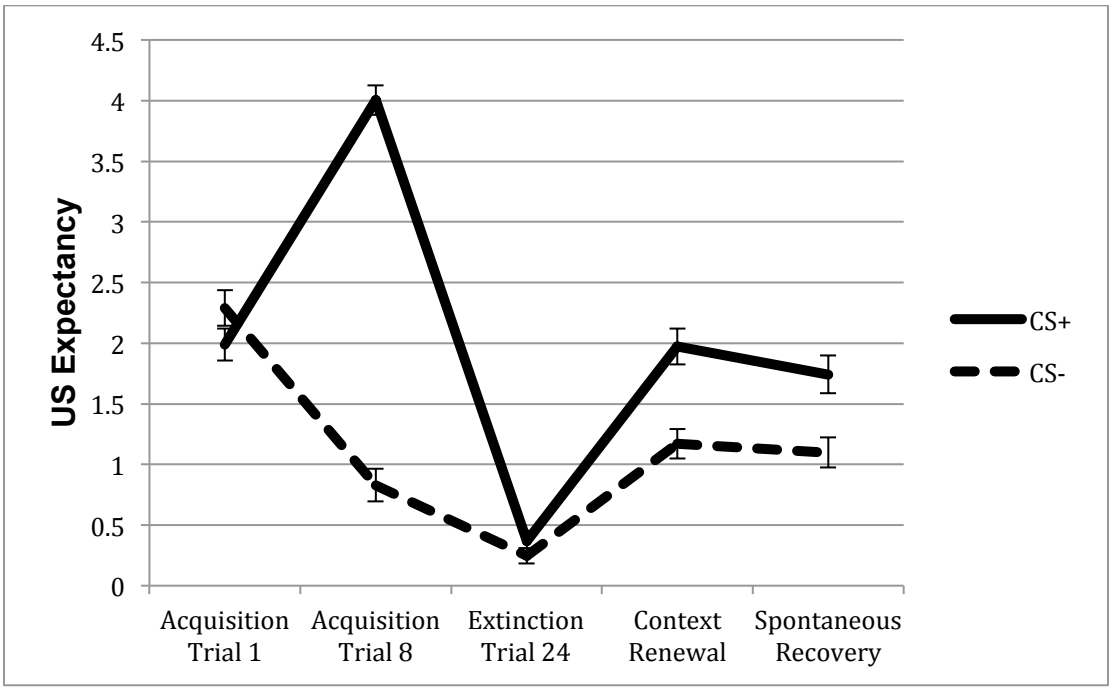


Expectancy.

For US Expectancy ratings, there was a main effect of phase ($F(3.185, 187.94)= 75.948$, $p<.001$ $\eta_p^2=.563$), a main effect of CS type ($F(1,59)= 101.522$, $p<.001$, $\eta_p^2=.632$), and a Phase x CS type interaction ($F(71.816, 186.721)= 81.555$, $p<.001$, $\eta_p^2=.580$). Planned comparisons indicated that there was a significant increase in US Expectancy to the CS+ from the beginning of Acquisition to the end of Acquisition ($p<.001$) and a decrease in US Expectancy to the CS+ from the end of Acquisition to the end of Extinction ($p<.001$). There was a significant return of fear to the CS+ and CS- from the end of Extinction to Renewal ($p<.001$) and

Spontaneous Recovery (ps<.001). However, return of fear was specific, as responding was greater to the CS+ than the CS- in Renewal (p<.001) and in Spontaneous Recovery (p<.001).

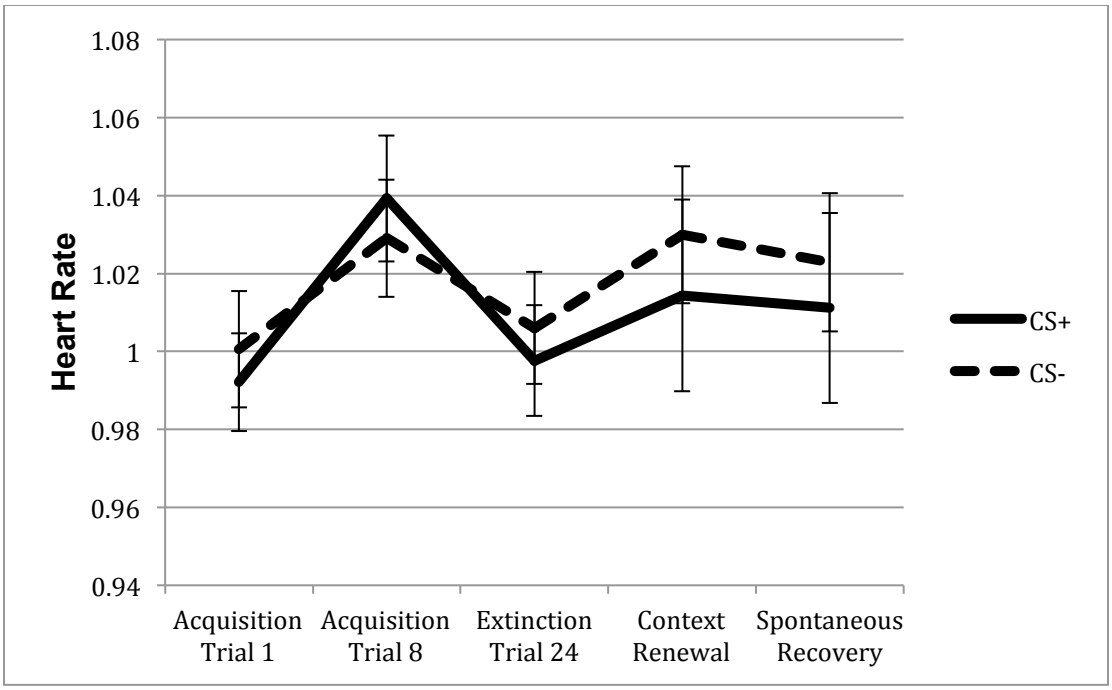
Figure 2: US Expectancy



Heart rate.

For Heart Rate, there was no main effect of Phase ($F(1.646, 88.863)=.717$, $p=.465$, $\eta_p^2= .013$), no main effect of CS Type ($F(1, 54)= 2.000$, $p=.163$, $\eta_p^2= .036$), or Phase x CS Type interaction ($F(2.289, 123.623)= .612$, $p=.565$, $\eta_p^2=.011$).

Figure 3: Heart Rate



Fear, valence, and arousal ratings.

For Fear ratings, there was a main effect of Phase ($F(3.459, 238.641)= 20.715$, $p<.001$, $\eta_p^2=.231$), a main effect of CS Type ($F(1,69)= 61.339$, $p<.001$, $\eta_p^2=.471$), and a Phase x CS Type interaction ($F(3.207, 221.294)= 35.578$, $p<.001$, $\eta_p^2= .340$). Planned comparisons indicated that there was a significant increase in Fear ratings to the CS+ from the beginning of Acquisition to the end of Acquisition ($p<.001$) and a decrease in Fear ratings to the CS+ from the end of Acquisition to the end of Extinction ($p<.001$). There was a significant return of fear from the end of Extinction to Renewal ($p=.012$) but no significant return of fear from the end of Extinction to Spontaneous Recovery ($p=.121$). Return of fear was not specific, as Fear ratings were significantly higher for the CS+ compared to the CS- at the end of Renewal ($p<.001$) and Spontaneous Recovery ($p<.001$).

For Valence ratings, there was a main effect of Phase ($F(3.425, 229.479) = 25.625$, $p<.001$, $\eta_p^2=.277$), a main effect of CS Type ($F(1,67) = 68.682$, $p<.001$, $\eta_p^2=.506$), and a Phase x CS Type interaction ($F(2.361,158.211) = 61.077$, $p<.001$, $\eta_p^2=.477$). Planned comparisons indicated participants rated the CS+ as significantly more negative at the end of Acquisition compared to the beginning of Acquisition ($p<.001$), and as significantly less negative at the end of Extinction compared to the end of Acquisition ($p<.001$). There was no significant change in Valence ratings from the end of Extinction to Renewal ($p=.780$) or Spontaneous Recovery ($p=.885$).

For Arousal ratings, there was a main effect of Phase ($F(4, 272) = 10.954$, $p<.001$, $\eta_p^2=.139$), a main effect of CS Type ($F(1,68) = 52.584$, $p<.001$, $\eta_p^2=.436$), and a Phase x CS Type interaction ($F(2.628, 178.712) = 31.493$, $p<.001$, $\eta_p^2=.317$). Planned comparisons indicated that there was a significant increase in Arousal ratings to the CS+ from the beginning of Acquisition to the end of Acquisition ($p<.001$), and a significant decrease from the end of Acquisition to the end of Extinction ($p<.001$). There was a significant increase in Arousal ratings to the CS+ from the end of Extinction to Renewal ($p=.016$), and Spontaneous Recovery ($p=.015$). There was also a significant increase in Arousal ratings to the CS- between the end of Extinction and Renewal ($p=.001$) and Extinction and Spontaneous Recovery ($p=.036$). However, return of fear was specific, as Arousal ratings to the CS+ were significantly higher than Arousal ratings to the CS- for Renewal ($p=.001$) and Spontaneous Recovery ($p<.001$).

Figure 4: Fear Ratings

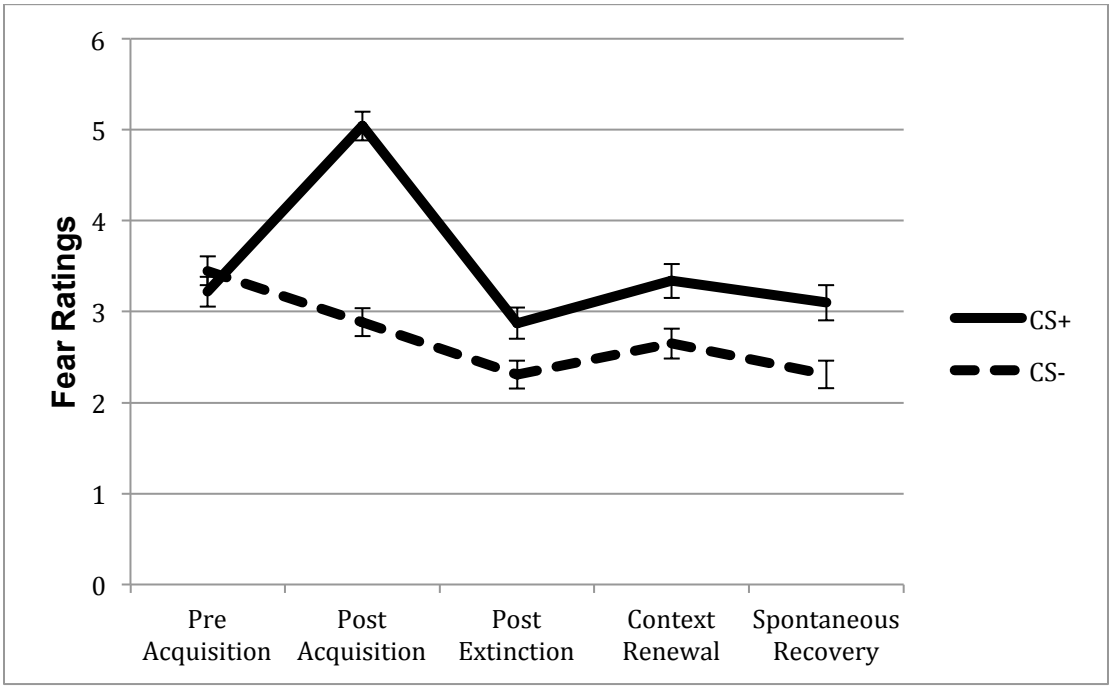


Figure 5: Valence Ratings

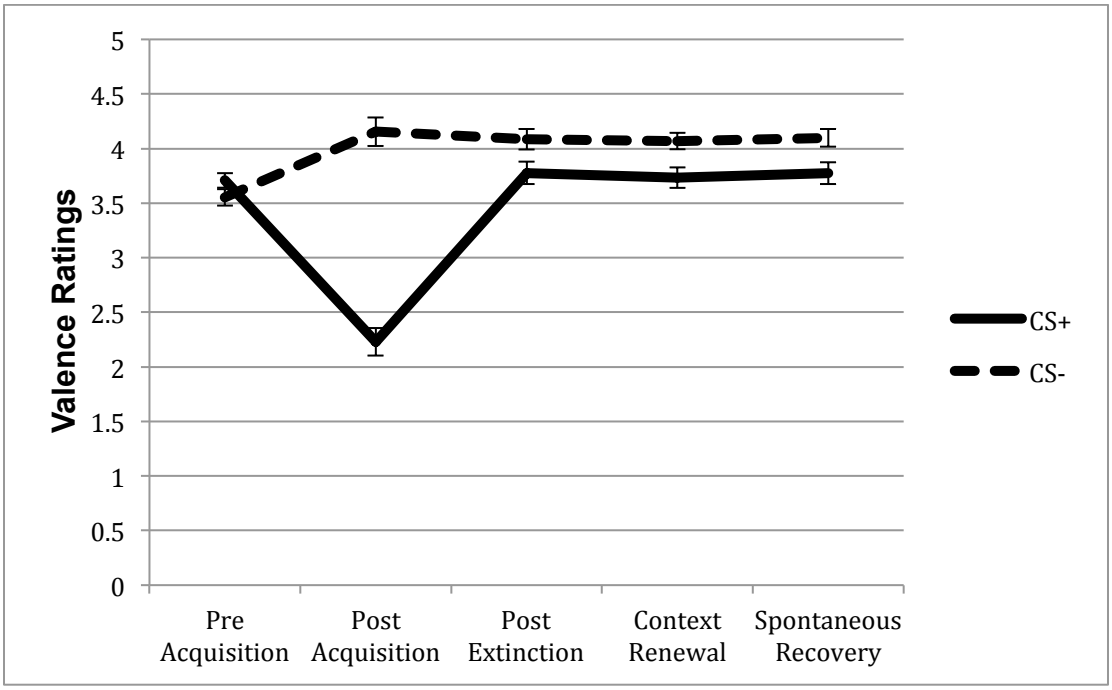
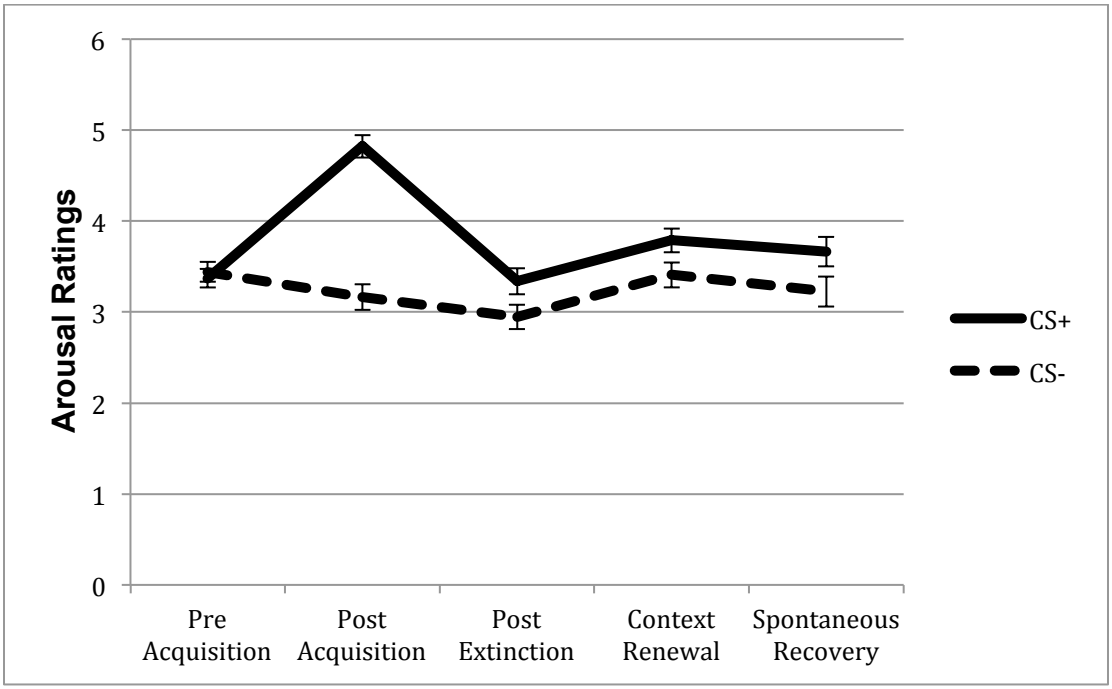


Figure 6: Arousal Ratings



Mood Induction

Mood induction was assessed using paired samples t tests. Within the Negative group, scores on the sum of the negative subscales of the PANAS-X increased from pre-mood induction to post-mood induction ($t(28)=-3.914$, $p=.001$). Scores on the sum of the positive subscales of the PANAS-X decreased from pre-mood induction to post-mood induction ($t(28)=4.933$, $p<.001$).

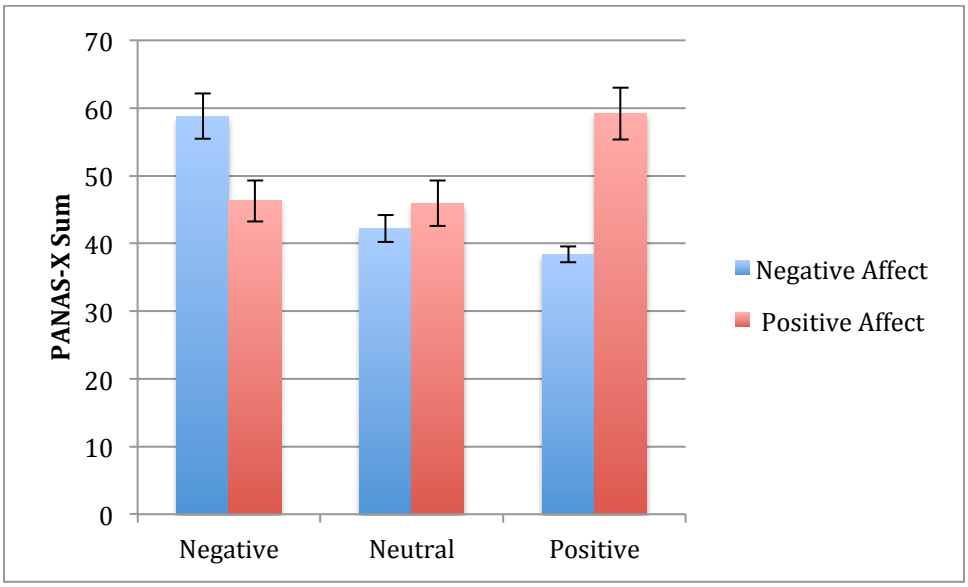
Within the Neutral group, scores on the sum of the negative subscales of the PANAS-X significantly decreased from pre-mood induction to post-mood induction ($t(29)=4.289$, $p<.001$). Scores on the sum of the positive subscales of the PANAS-X did not significantly change from pre-mood induction to post-mood induction ($t(29=1.621$, $p=.116$).

Within the Positive group, scores on the sum of the negative subscales of the PANAS-X significantly decreased from pre-mood induction to post-mood induction ($t(30)=6.094$, $p<.001$). Scores on the sum of the positive subscales of the PANAS-X increased from pre-mood induction to post-mood induction ($t(30)=-2.312$, $p=.028$).

Using one-way ANOVA, the sum of the negative subscales of the PANAS-X significantly differed between groups ($F(2,89)=25.708$, $p<.001$). Planned comparisons indicated that the Negative group showed significantly greater negative affect than the Neutral group or the Positive group ($ps<.001$). The Neutral and Positive groups were not significantly different in negative affect ($p=.393$). The sum of the positive subscales of the PANAS-X differed between groups ($F(2,89)=6.009$, $p=.004$). Planned comparisons indicated that the Positive group showed significantly higher positive affect than the Negative group ($p=.002$), and the Neutral group ($p=.010$).

Finally, groups did not differ on the sum of the negative subscales of the PANAS-X ($F(2,90)=.977$, $p=.381$) or the sum of the positive subscales of the PANAS-X ($F(2,90)=.352$, $p=.705$) following acquisition.

Figure 7: Mood Induction



Discrimination and Extinction, Spontaneous Recovery, and Context Renewal

Skin conductance.

Discrimination on SCR was not significantly correlated with SCR to the CS+ at the end of Extinction (r(78)=-.182, p=.110) or the first two trials of Renewal (r(54)=-.228, p=.098). It was not associated with SCR to the CS+ during trials 1, 3, or 4 of Renewal (al ps > .137). It was marginally negatively correlated with Renewal when averaging across all four trials (r(54)=-.262, p=.055) and was significantly negatively correlated when examining the second trial of Renewal (r(54)=-.277, p=.042). It was significantly negatively correlated with the first two trials of Spontaneous Recovery (r(53)=-.479, p<.001), when averaging all four trials of Spontaneous Recovery (r(53)=-.367, p=.007), and when examining trial 1 (r(53)=-.448, p=.001) and trial 2 (r(53)=-.326, p=.017) of Spontaneous Recovery. It was not

significantly correlated with either the 3rd or 4th trial of Spontaneous Recovery (all ps > .233).

It was not significantly correlated with SCR to the CS- at the end of Extinction (r(76)=-.005, p=.966). It was negatively correlated with SCR to the first two trials of Renewal (r(53)=-.408, p=.002), when averaging all four trials of Renewal (r(53)=-.383, p=.004), when examining the 1st (r(54)=-.357, p=.008), and marginally 3rd trials of Renewal (r(54)=-.255, p-.063). It was not significantly correlated with trials 2 or 4 of Renewal (all ps >.220). It was significantly correlated with SCR to the average of all 4 trials of Spontaneous Recovery (r(53)=-.351, p=.010) and trials 1 (r(53)=-.310, p=.024), 2 (r(53)=-.288, p=.037), marginally 3 (r(52)=-.265, p=.058, and 4 (r(53)=-.338, p=.013). It was not significantly correlated with the first 2 averaged trials of Spontaneous Recovery (r(51)=-.120, p-.402).

Expectancy.

Discrimination on Expectancy was significantly positively correlated with Expectancy to the CS+ at the end of Extinction (r(84)=.277, p=.011). It was not significantly correlated with the average of the first 2 trials of Spontaneous Recovery, the average of all trials of Spontaneous Recovery, or any individual trial (all ps > .356). It was marginally positively correlated with the first 2 trials of Renewal (r(61)=.223, p=.084) and trial 1 of Renewal (r(61)=.341, p=.007), but was not correlated with the average of all 4 trials or trials 2, 3, or 4 of Renewal (all ps >.113).

Discrimination on Expectancy was significantly positively correlated with Expectancy to the CS- at the end of Extinction (r(84)=.442, p<.001). It was

negatively correlated with Expectancy to the CS- for the first 2 trials of Spontaneous Recovery (r(60)=-.334, p=.009), all four averaged trials of Spontaneous Recovery (r(60)=-.402, p=.001), and trials 2, (r(60)=-.511, p<.001), 3, (r(60)=-.314, p=.015), and 4 (r(60)=-.369, p=.004). It was not significantly correlated with trial 1 of Spontaneous Recovery (r(60)=-.119, p=.364). It was significantly negatively correlated with trial 4 of Renewal (r(61)=-.323, p=.011) and marginally correlated with trial 3 (r(61)=-.231, p=.074). It was not significantly correlated with the first 2 averaged trials of Renewal, all 4 averaged trials, or trials 1 or 2 (all ps >.207).

Heart rate.

Discrimination on Heart Rate was not significantly correlated with Heart Rate to the CS+ at the end of Extinction, the first two trials of Renewal, the first two trials of Spontaneous Recovery, the average of all four trials of Renewal or Spontaneous Recovery, or any individual trial of Renewal or Spontaneous Recovery (all ps > .476) with the exception of a marginal positive correlation with Heart Rate to the CS+ at trial 2 of Renewal (r(56)=.236, p=.079).

Discrimination on Heart Rate was not significantly correlated with Heart Rate to the CS- at the end of Extinction, the first two trials of Renewal, the first two trials of Spontaneous Recovery, the average of all four trials of Renewal or Spontaneous Recovery, or any individual trial of Renewal or Spontaneous Recovery (all ps > .280).

Fear, valence, and arousal ratings.

Discrimination on Fear ratings was not significantly correlated with Fear ratings to the CS+ at the end of Extinction (r(90)=-.173, p=.102), Renewal (r(70)=-

.031, p=.801), or Spontaneous Recovery (r(70)=-.192 p=.111). It was significantly negatively correlated with Fear ratings to the CS- at the end of Extinction (r(90)=-.531, p<.001), Renewal (r(70)=-.272, p=.023), and Spontaneous Recovery (r(70)=-.466, p<.001).

Discrimination on Valence ratings was significantly positively correlated with Valence ratings to the CS+ at Renewal (r(70)=.245, p=.041). It was not significantly correlated with Valence ratings to the CS+ at the end of Extinction (r(90)=.065, p=.546) or Spontaneous Recovery (r(70)=-.034 p=.779). It was significantly negatively correlated with Valence ratings to the CS- at the end of Extinction (r(90)=-.278, p=.008) and Spontaneous Recovery (r(70)=-.285, p=.017). It was not significantly correlated with Valence ratings at Renewal (r(70)=-.51, p=.675).

Discrimination on Arousal ratings was negatively correlated with Arousal ratings to the CS+ at the end of Extinction (r(90)=-.247, p=.019). It was not significantly correlated with Arousal ratings at Renewal (r(70)=-.089, p=.462) or Spontaneous Recovery (r(79)=.060, p=.624). It was significantly negatively correlated with Arousal ratings to the CS- at the end of Extinction (r(90)=-.393, p<.001). It was not significantly correlated with Arousal ratings to the CS- at Renewal (r(70)=-.165, p=.171) or Spontaneous Recovery (r(70)=-.123, p=.309).

Group Differences in Extinction, Spontaneous Recovery, and Context Renewal

Skin conductance.

Using one-way ANOVA, groups did not differ on SCR to the CS+ at the end of Extinction, the first two trials of Renewal, the first two trials of Spontaneous Recovery, when averaging across all four trials of Renewal and Spontaneous Recovery, or when examining each trial individually (all ps>.268).

Groups marginally differed on SCR to the CS- at the end of Extinction ($F(2, 82)=3.068$, $p=.052$). The Negative group showed marginally greater SCR than the Neutral group ($p=.053$) and significantly greater SCR than the Positive group ($p=.024$). Neutral and Positive groups did not differ on SCR at the end of Extinction ($p=.706$). Groups did not differ on SCR to the CS- across the first two trials of Renewal, the first two trials of Spontaneous Recovery, when averaging across all four trials of Renewal and Spontaneous Recovery, or when examining each trial individually (all ps > .165).

Paired samples t tests showed that the average SCR to CS+ at Habituation ($M=.30$, $SE=.02$) was significantly lower than SCR to CS+ at the beginning of Acquisition ($M=.39$, $SE=.03$, $t(86)=-3.183$, $p=.002$) and SCR to CS+ at the end of Acquisition ($t(86)=-2.511$, $p=.014$). Average SCR to the CS- at Habituation ($M=.32$, $SE=.03$) was significantly lower than SCR to CS- at the beginning of Acquisition ($M=.45$, $SE=.04$, $t(86)=-3.011$, $p=.003$) and significantly higher than SCR to CS- at the end of Acquisition ($M=.26$, $SE=.03$, $t(86)=2.053$, $p=.043$).

Expectancy.

Using one-way ANOVA, groups did not differ on Expectancy to the CS+ or CS- at the end of Extinction, the first two trials of Renewal, the first two trials of Spontaneous Recovery, when averaging across all four trials of Renewal and

Spontaneous Recovery, or when examining each trial individually (all ps> .119), with the exception of a marginal difference among groups during the first trial of Renewal for the CS- ($F(2, 60)=2.449$, $p=.095$). The Negative group showed marginally higher Expectancy than the Positive group ($p=.053$) and the Positive group showed marginally higher Expectancy than the Neutral group ($p=.065$). The Negative and Neutral groups did not show significantly different Expectancy to the CS- ($p=.821$).

Heart rate.

Using one-way ANOVA, groups differed on Heart Rate to the CS+ at the end of Extinction ($F(2,80)=3.426$, $p=.037$). The Negative group showed significantly lower heart rate than the Positive group ($p=.014$) and the Neutral group showed marginally lower heart rate than the Positive group ($p=.066$). The Negative group did not show significantly different heart rate than the Neutral group ($p=.489$). Heart Rate to the CS+ and CS- did not otherwise differ among groups for Extinction, the first 2 trials of Renewal or Spontaneous Recovery, all averaged trials of Renewal or Spontaneous Recovery, or any individual trial of Renewal or Spontaneous Recovery (all ps > .252).

Fear, valence, and arousal ratings.

Using one-way ANOVA, groups did not differ on Fear ratings to the CS+ or CS- at the end of Extinction, Renewal, or Spontaneous Recovery (all ps >.179). Groups did not differ on Valence ratings to the CS+ or CS- at the end of Extinction, Renewal, or Spontaneous Recovery (all ps > .486). Groups did not differ on Arousal ratings to the CS+ or CS- at the end of Extinction, Renewal, or Spontaneous

Recovery (all ps > .206), with the exception of Arousal to the CS- at Extinction (F(2, 89)=2.931, p=.059. Positive group participants showed increased arousal to the CS- at the end of Extinction compared to the Negative group (p=.018). The Negative and Neutral groups did not differ, and the Neutral and Positive groups did not differ (all ps > .187).

Mediation Analyses

Cases in which Discrimination significantly predicted outcomes are listed in tables 1 and 2. See appendices for tables for mediation results.

Table 1: Discrimination predicting outcomes: CS+ *x= n.s. neg = negative prediction pos = positive prediction - = no analysis*

	Skin Conductance	Expectancy	Heart Rate	Fear Ratings	Valence Ratings	Arousal Ratings
Extinction CS+	X	Pos	X	X	X	Neg
Context Renewal Averaged CS+	X	X	X	X	Pos	X
Context Renewal Trial 1 CS+	X	Pos	X	-	-	-
Context Renewal Trial 2 CS+	X	X	X	-	-	-
Context Renewal Trial 3 CS+	X	X	X	-	-	-
Context Renewal Trial 4 CS+	X	X	X	-	-	-
Spontaneous Recovery Averaged CS+	Neg	X	X	X	X	X
Spontaneous Recovery Trial 1 CS+	Neg	X	X	-	-	-
Spontaneous Recovery Trial 2 CS+	Neg	X	X	-	-	-
Spontaneous Recovery Trial 3 CS+	X	X	X	-	-	-
Spontaneous Recovery Trial 4 CS+	X	X	X	-	-	-

Table 2: Discrimination predicting outcomes: CS- *x= n.s. neg = negative prediction pos = positive prediction - = no analysis*

	Skin Conductance	Expectancy	Heart Rate	Fear Ratings	Valence Ratings	Arousal Ratings
Extinction CS-	X	Pos	X	Neg	Neg	Neg
Context Renewal Averaged CS-	Neg	X	X	X	X	X
Context Renewal Trial 1 CS-	Neg	X	X	-	-	-
Context Renewal Trial 2 CS-	X	X	X	-	-	-
Context Renewal Trial 3 CS-	X	X	X	-	-	-
Context Renewal Trial 4 CS-	X	Neg	X	-	-	-
Spontaneous Recovery Averaged CS-	Neg	Neg	X	Neg	Neg	X
Spontaneous Recovery Trial 1 CS-	Neg	X	X	-	-	-
Spontaneous Recovery Trial 2 CS-	Neg	Neg	X	-	-	-
Spontaneous Recovery Trial 3 CS-	X	Neg	X	-	-	-
Spontaneous Recovery Trial 4 CS-	Neg	Neg	X	-	-	-

Group and extinction, spontaneous recovery, and context renewal.

Skin conductance.

Mediation analyses indicated that SCR Discrimination did not mediate the relationship between Group and SCR to the CS+ or CS- at Extinction, Context Renewal, or Spontaneous Recovery. All indirect effects were nonsignificant with the exception of some indirect effects detected for Spontaneous Recovery. In the

absence of significant a paths, these indirect effects reflect a type I error. Throughout each phase, Discrimination occasionally negatively predicted SCR. Rare significant direct and total effects reflect Type I error.

Expectancy.

Expectancy Discrimination did not mediate the relationship between Group and Expectancy to the CS+ or CS- at Extinction, Context Renewal, or Spontaneous Recovery. All indirect, direct, and total effects were nonsignificant. Throughout each phase, Discrimination occasionally negatively or positively predicted Expectancy.

Heart rate.

Heart Rate Discrimination did not mediate the relationship between Group and Heart Rate to the CS+ or CS- at Extinction, Context Renewal, or Spontaneous Recovery. All indirect, direct, and total effects were nonsignificant with rare exceptions that represent Type I error. Discrimination did not predict Heart Rate at any phase.

Fear, valence, and arousal ratings.

Fear, Valence, and Arousal ratings Discrimination did not mediate the relationship between Group and ratings to the CS+ or CS- at Extinction, Context Renewal, or Spontaneous Recovery. All indirect, direct, and total effects were nonsignificant with rare exceptions that represent a Type I error. Discrimination occasionally negatively predicted Fear and Arousal ratings-, and positively or negatively predicted Valence ratings.

Mood change from pre to post mood induction and extinction, spontaneous recovery, and context renewal.

Skin conductance.

SCR Discrimination did not mediate the relationship between Positive or Negative Mood Change and SCR at Extinction, Spontaneous Recovery, or Context Renewal for the CS+ or CS-. Total, indirect, and direct effects were nonsignificant. Discrimination occasionally negatively predicted SCR.

Expectancy.

Expectancy Discrimination did not mediate the relationship between Positive or Negative Mood Change and Expectancy at Extinction, Spontaneous Recovery, or Context Renewal for the CS+ or CS-. Total, indirect, and direct effects were nonsignificant. Discrimination occasionally positively or negatively predicted Expectancy.

Heart rate.

Heart Rate Discrimination did not mediate the relationship between Positive or Negative Mood Change and Heart Rate at Extinction, Spontaneous Recovery, or Context Renewal for the CS+ or CS-. Total, indirect, and direct effects were nonsignificant. Discrimination rarely positively predicted Heart Rate.

Fear, valence, and arousal ratings.

Fear, Valence, and Arousal ratings Discrimination did not mediate the relationship between Positive or Negative Mood Change and ratings at Extinction, Context Renewal, or Spontaneous Recovery for the CS+ or CS-. All total, direct, and indirect effects were nonsignificant. Discrimination occasionally negatively

predicted Fear and Arousal ratings, and occasionally negatively or positively predicted Valence ratings.

Mood and Outcomes Correlations

Skin conductance.

The sum of the Positive subscales of the PANAS-X at the end of Extinction was not correlated with SCR for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.208), with the exception of a marginal positive correlation with SCR to the CS- at the end of extinction ($r(85)=.24$, $p=.027$). None of these measures correlated with the sum of the Negative subscales of the PANAS-X at the end of Extinction (all ps>.094).

The sum of Positive subscales of the PANAS-X on Day 8 was marginally negatively correlated with SCR at the first trial of Spontaneous Recovery for the CS- ($r(57)=-.239$, $p=.074$) and SCR at the average of all four trials of Context Renewal for the CS+ ($r(57)=-.239$, $p=.071$). With these exceptions, the sum of the Positive subscales of the PANAS-X on Day 8 was not significantly correlated with SCR for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any other individual trial of Context Renewal or Spontaneous Recovery (all ps>.096).

The sum of the Negative subscales of the PANAS-X at Day 8 was not correlated with SCR for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.325).

Expectancy.

The sum of the Positive subscales of the PANAS-X at the end of Extinction was marginally negatively correlated with Expectancy at the third trial of Spontaneous Recovery for the CS+ ($r(60)=-.249$, $p=.055$). With this exception, the sum of the Positive subscales of the PANAS-X at the end of Extinction was not correlated with Expectancy for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.088). None of these measures correlated significantly with the sum of the Negative subscales of the PANAS-X at the end of Extinction (all ps>.151).

The sum of the Positive subscales of the PANAS-X at Day 8 was not correlated with Expectancy for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.146).

The sum of the Negative subscales of the PANAS-X at Day 8 was marginally positively correlated with Expectancy to the CS+ at the average of all four trials of

Spontaneous Recovery (r(60)=.246, p=.058), and at the third (r(60)=.283, p=.028) and fourth (r(60)=.392, p=.002) trials of Spontaneous Recovery. The sum of the Negative subscales of the PANAS-X at Day 8 was not correlated with Expectancy for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.082).

Heart rate.

The sum of the Positive subscales of the PANAS-X at the end of Extinction was not correlated with Heart Rate for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.175).

The sum of the Negative subscales of the PANAS-X at the end of Extinction was not correlated with Heart Rate for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.086).

The sum of the Positive subscales of the PANAS-X at Day 8 was not correlated with Heart Rate for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.216).

The sum of the Negative subscales of the PANAS-X at Day 8 was not correlated with Heart Rate for the CS+ or CS- at the end of Extinction, for the first 2 trials of Context Renewal, for the first 2 trials of Spontaneous Recovery, all trials of Context Renewal, all trials of Spontaneous Recovery, or any individual trial of Context Renewal or Spontaneous Recovery (all ps>.420).

Fear, valence, and arousal ratings.

The sum of the Positive subscales of the PANAS-X at the end of Extinction was positively correlated with Valence ratings to the CS- at the end of Extinction ($r(90)=.360$, $p=.001$), Valence ratings to the CS+ at the end of Extinction ($r(90)=.386$, $p<.001$), negatively correlated with Fear ratings to the CS+ at the end of Extinction ($r(90)=-.222$, $p=.386$, $p<.001$), and positively correlated with Valence ratings to the CS+ at Context Renewal ($r(70)=.253$, $p=.035$). With those exceptions, ratings for Fear, Valence, and Arousal to the CS+ or CS- at any phase were not correlated with the sum of the Positive subscales of the PANAS-X at the end of Extinction (all ps>.112). The sum of the Negative subscales of the PANAS-X at the end of Extinction was not correlated with any Fear, Valence, or Arousal ratings to the CS+ or CS- at any phase (all ps>.112).

The sum of the Positive subscales of the PANAS-X at Day 8 was significantly negatively correlated with Fear ratings to the CS- at the end of Extinction ($r(70)=-.258$, $p=.031$), Fear ratings to the CS+ at the end of Extinction ($r(70)=-.292$, $p=.014$), positively correlated with Valence ratings to the CS- at the end of Extinction ($r(70)=.287$, $p=.016$), and positively correlated with Valence ratings to the CS- at Spontaneous Recovery ($r(67)=.325$, $p=.007$). It was marginally

positively correlated with Valence ratings to the CS+ at Context Renewal ($r(67)=.225$, $p=.067$). No other correlations between the sum of the Positive subscales of the PANAS-X at Day 8 and Fear, Valence, or Arousal ratings at any phase emerged (all ps>.124). The sum of the Negative subscales of the PANAS-X was negatively correlated with Valence ratings to the CS+ at Spontaneous Recovery ($r(67)=-.292$, $p=.017$), positively correlated with Fear ratings to the CS+ at Spontaneous Recovery ($r(67)=.271$, $p=.027$), and positively correlated with Arousal ratings to the CS+ at Spontaneous Recovery ($r(67)=.317$, $p=.009$). With these exceptions, the sum of the Negative subscales of the PANAS-X was not correlated with Fear, Valence, or Arousal ratings at any phase (all ps>.088).

Follow Up Analyses: Correlations Between Mood Change and Discrimination

Correlations revealed that change in the sum of the Positive subscales of the PANAS-X from pre to post mood induction was not correlated with any measure of discrimination (all ps>.439). Change in the sum of the Negative subscales of the PANAS-X from pre to post mood induction was not correlated with any measure of discrimination (all ps>.122).

Follow Up Analyses: Mediation of Discrimination Between Change in Affect from the Beginning of Acquisition to the End of Acquisition and Extinction, Context Renewal, and Spontaneous Recovery

Skin conductance.

SCR Discrimination did not mediate the relationship between Positive or Negative Acquisition mood change and SCR at Extinction, Context Renewal, or Spontaneous Recovery for the CS+ or CS-. All total, and direct effects were nonsignificant. Discrimination occasionally negatively predicted SCR.

Expectancy.

Expectancy Discrimination did not mediate the relationship between Positive or Negative Acquisition mood change and Expectancy at Extinction, Context Renewal, or Spontaneous Recovery for the CS+ or CS-. All total, and direct effects were nonsignificant. Discrimination occasionally positively or negatively predicted Expectancy.

Heart rate.

Heart Rate Discrimination did not mediate the relationship between Positive or Negative Acquisition Mood Change and Heart Rate at Extinction, Context Renewal, or Spontaneous Recovery for the CS+ or CS-. All total, and direct effects were nonsignificant. Discrimination occasionally negatively or positively predicted Heart Rate.

Fear, valence, and arousal ratings.

Fear, Valence, and Arousal ratings Discrimination did not mediate the relationship between Positive or Negative Acquisition Mood Change and ratings at

Extinction, Context Renewal, or Spontaneous Recovery for the CS+ or CS-. All total, direct, and indirect effects were nonsignificant. Discrimination occasionally negatively or positively predicted ratings.

Fear, Valence, and Arousal Correlations

At Habituation, for the CS-, Fear and Arousal ratings were positively correlated ($r(93)=.261$, $p=.012$), Fear and Valence ratings were not correlated ($r(93)=-.144$, $p=.165$), and Arousal and Valence ratings were positively correlated ($r(93)= .225$, $p=.030$). For the CS+, Fear and Arousal ratings were positively correlated ($r(93)=.336$, $p=.001$), Fear and Valence Ratings were negatively correlated ($r(93)=-.368$, $p<.001$), and Arousal and Valence ratings were not correlated ($r(93)=.015$, $p=.889$).

At Acquisition, for the CS-, Fear and Arousal ratings were positively correlated ($r(93)=.664$, $p<.001$), Fear and Valence ratings were negatively correlated ($r(93)=-.564$, $p<.001$), and Arousal and Valence ratings were negatively correlated ($r(93)=-.580$, $p<.001$). For the CS+, Fear and Arousal ratings were positively correlated ($r(93)=.508$, $p<.001$), Fear and Valence Ratings were negatively correlated ($r(93)=-.568$, $p<.001$), and Arousal and Valence ratings were negatively correlated ($r(93)=-.384$, $p<.001$).

At Extinction, for the CS-, Fear and Arousal ratings were positively correlated ($r(93)=.573$, $p<.001$), Fear and Valence ratings were negatively correlated ($r(93)=-.381$, $p<.001$), and Arousal and Valence ratings were negatively correlated ($r(93)=-.298$, $p=.004$). For the CS+, Fear and Arousal ratings were positively correlated

(r(93)=.656, p<.001), Fear and Valence Ratings were negatively correlated (r(93)=-.375, p<.001), and Arousal and Valence ratings were negatively correlated (r(93)=-.318, p=.002).

At Spontaneous Recovery, for the CS-, Fear and Arousal ratings were positively correlated (r(71)= .399, p=.001), Fear and Valence ratings were negatively correlated (r(71)=-.312, p=.008, and Arousal and Valence ratings were not correlated (r(71)=-.009, p=.942). For the CS+, Fear and Arousal ratings were positively correlated (r(71)= .543, p<.001), Fear and Valence Ratings were negatively correlated (r(71)=-.525, p<.001), and Arousal and Valence ratings were negatively correlated (r(71)= -.302, p=.011).

At Context Renewal, for the CS-, Fear and Arousal ratings were positively correlated (r(71)=.362, p=.002), Fear and Valence ratings were negatively correlated (r(71)= -.313, p=.008), and Arousal and Valence ratings were not correlated (r(71)=.077, p=.525). For the CS+, Fear and Arousal ratings were positively correlated (r(71)=.551, p<.001), Fear and Valence Ratings were negatively correlated -.493, p<.001), and Arousal and Valence ratings were negatively correlated (r(71)=-.359, p=.002).

Discussion

The present study examined whether a mood induction prior to conditioning is associated with discrimination learning, and whether discrimination learning impacts extinction, spontaneous recovery, and context renewal. Our competing hypotheses were 1) negative mood induction would impair discrimination, or 2) both

negative and positive mood inductions would impair discrimination. Neither of our competing hypotheses was supported: mood induction was not associated with discrimination and, while there was limited and inconsistent support for a relationship between discrimination and fear at extinction, context renewal, and spontaneous recovery, neither positive nor negative mood prior to acquisition impacted these outcomes.

Ratings data provided inconsistent evidence of acquisition, extinction, and return of fear. Ratings of US expectancy and arousal ratings revealed clear fear acquisition, extinction, context renewal, and spontaneous recovery. For fear ratings, however, while acquisition, extinction, and context renewal were demonstrated, spontaneous recovery was not. Similarly, valence ratings revealed significant acquisition and extinction but not context renewal or spontaneous recovery. Return of fear was not reliably observed among subjective ratings. This may be due to re-extinction during test phases as fear, valence, and arousal ratings were taken at the end of context renewal and spontaneous recovery. Additionally, it should be noted that measures of fear, valence, and arousal were correlated across all study phases and may represent the same construct.

Physiological indices produced more complex findings regarding conditioning, extinction, and return of fear. For SCR, no significant difference from the beginning to the end of acquisition was observed, although SCR to the CS+ was greater than SCR to the CS- at the end of acquisition. This may reflect failure of the CS+ to evoke a fear response by the end of extinction, however skin conductance at the beginning of acquisition was significantly higher than skin

conductance at the end of extinction; this suggests that skin conductance was elevated before fear learning ever took place. This consistently elevated physiological responding prior to formal fear conditioning may be explained by the demand characteristics of the study: participants were informed they would receive an aversive stimulus at some point in the task, potentially producing an immediate increase in physiological reactivity before associative learning. Skin conductance was lower at habituation than at the beginning of acquisition for both the CS+ and CS-, which does not support this explanation, however participants did not have headphones on during habituation and elevated reactivity due to task demands may not have occurred until participants placed the headphones on.

Extinction was demonstrated through a decrease in SCR from the end of acquisition to the end of extinction. It should be noted that not only was skin conductance significantly higher at the end of acquisition compared to the end of extinction but also higher at the beginning of acquisition compared to the end of extinction. While there was no main effect of CS type (which would indicate differential learning at the task level) SCR to the CS+ was greater than SCR to the CS- at the end of acquisition, indicating differential acquisition. This planned comparison should be interpreted with caution in the absence of a main effect of CS type. A measure of Heart Rate did not demonstrate significant acquisition, extinction, or return of fear, thus Heart Rate results should be interpreted with caution.

Mood inductions within each group were successful with a few caveats. For the Negative group, negative affect increased from pre-mood induction to post-

mood induction, however this was not specific to negative affect: positive affect decreased from pre-mood induction to post-mood induction. For the Positive group, negative affect decreased and positive affect increased. For the Neutral group, a decrease in negative affect was observed, calling into question whether this condition differed from the Positive group. Follow-up comparisons did not reveal significant differences between the Neutral group and the Positive group on overall negative affect, however individuals in the Positive group showed significantly higher positive affect than those in the Neutral or Negative groups, thus we proceeded with group comparisons.

Analyses of skin conductance, US expectancy, heart rate, and fear, valence, and arousal ratings revealed no significant differences between groups on extinction, context renewal, or spontaneous recovery, with the following exceptions: The Negative group showed significantly lower heart rate than the Positive group at the end of Extinction, and participants in the negative group showed higher SCR at the end of extinction than participants in the positive group.

Analyses investigating whether discrimination between the CS+ and CS- predicted extinction and return of fear were inconclusive. Discrimination on each index occasionally negatively predicted these outcomes. Based on this limited support for an association between discrimination and extinction, context renewal, and spontaneous recovery, we proceeded with mediation analyses.

Mediation analyses revealed that discrimination did not mediate between group and extinction, context renewal, or spontaneous recovery. Furthermore, discrimination did not mediate between mood change from pre-mood induction to

post-mood induction and these outcomes. Under some circumstances, when controlling for group or mood change, discrimination predicted extinction, context renewal, and spontaneous recovery, however this effect was not consistent. Finally, mood following extinction was not associated with any of these outcomes, with few exceptions. For example, positive mood at the end of extinction was positively correlated with valence ratings to the CS+ and CS- at the end of extinction and negatively correlated with fear ratings to the CS+ at the end of extinction. Additionally, with few exceptions, mood on day 8 was not associated with these outcomes.

At first glance, these results appear to suggest that affect does not impact discrimination between a CS+ and CS-. However, it is possible that the process of fear conditioning itself acted as a negative mood induction, eliminating the impact of viewing positive or negative videos prior to acquisition. Indeed, prior research shows that exposure to the US over several trials is experienced as aversive, and, by this mechanism, perceptual accuracy is impaired and discrimination is decreased (e.g., Struyf, Zaman, Vervliet, & Van Diest, 2015). For example, previous studies have demonstrated that aversive conditioning using a variety or USs impacts the ability to distinguish between a CS+ (such as a tone) and similar neutral stimuli (such as tones of a similar but different frequency), suggesting a relationship between affect and discrimination (Laufer & Paz, 2012; Resnik et al., 2011; Schechtman et al., 2010).

In support of this, while group differences in affect were observed immediately following the mood induction, different groups showed similar affect

immediately following acquisition. We investigated whether positive or negative mood change during acquisition was associated with any measure of discrimination, however no relationship was found. Discrimination did not mediate between mood change from pre-acquisition to post-acquisition and extinction, spontaneous recovery, or context renewal. This may be due to limited variability on subjective indices of conditioning or mood change.

Additionally, while the present study utilized several elements to simulate context, it was not determined whether these cues were processed as context or as discrete cues using a test of immediate shock deficit (Wiltgen, Sanders, Anagnostaras, Sage, & Fanselow, 2006).

In sum, the current findings suggest that, while discrimination between a CS+ and CS- may be associated with changes in extinction and return of fear, affect may or may not impact this discrimination and thus impact extinction and return of fear. However, affect prior to fear conditioning does not impact these outcomes due to the mood change induced by the experience of the US.

STUDY 3

DIFFERENTIAL BRAIN ACTIVATION IN RESPONSE TO NEUTRAL AND UNSAFE STIMULI, EXTINCTION LEARNING AND RECALL

Introduction

Previous studies have examined the neural underpinnings of Pavlovian fear conditioning. Few studies, however, have examined the neural underpinnings of differentiation between neutral and unsafe stimuli during fear conditioning and their relationship with self-reported fear, extinction and return of fear as measured by physiological indices.

A network of brain regions may be responsible for differentially processing the CS- as a neutral cue and the CS+ as a cue signaling danger. These regions may include the insular cortex, hippocampus, dorsal anterior cingulate cortex, and ventromedial prefrontal cortex (Fullana et al., 2016). According to Fullana et al. (2016), insula and dACC may show higher activation to the CS+ relative to the CS- while hippocampus and vmPFC may show higher activation to the CS- relative to the CS+. Whether this differentiation may mediate the relationship between fear symptoms and extinction and return of fear as measured by physiological indices has not yet been studied.

The amygdala is a structure that is essential in fear conditioning processes (e.g., Zimmerman, Rabinak, McLachlan, & Maren, 2007). During differential Pavlovian fear conditioning, differential amygdala activity has been demonstrated in animals (Collins & Paré, 2000) and humans such that activation is greater in the presence of the CS+ than the CS- (Buchel et al., 1998; Buchel et al., 1999; Cheng,

Knight, Smith, & Helmstetter, 2006; LaBar et al., 1998). It is unknown whether the magnitude of this difference is predicted by anxiety or predicts extinction and return of fear.

This investigation examined whether smaller differences in brain activation when presented the CS+ versus the CS- (i.e., decreased discrimination) accompany greater fear symptoms. Additionally, this study investigated whether this differentiation between the CS+ and the CS- can predict extinction learning and recall as measured by skin conductance to determine whether poor discrimination predicts poorer extinction and greater return of fear. We hypothesized that the following regions will show greater activation in the presence of the CS+ relative to the CS- and that smaller differences will accompany greater anxiety symptoms: 1) amygdala, 2) dorsal anterior cingulate cortex, and 3) insula.

We hypothesized that regions showing greater deactivation in the presence of the CS- relative to the CS+ would include 1) ventromedial prefrontal cortex, and 2) hippocampus. We predicted that smaller deactivation would accompany greater anxiety symptoms. Finally, it was predicted that that the magnitude of these differences will positively predict decrease in skin conductance response to the CS+ from the beginning to the end of extinction and negatively predict skin conductance response to the CS+ at test of extinction recall.

These regions were selected based on a meta analysis by Fullana et al., (2016) as well as previous work implicating the amygdala, (e.g., Zimmerman, Rabinak, McLachlan, & Maren, 2007) dorsal anterior cingulate cortex, insula (e.g., Linnman, Rougemont-Bücking, Beucke, Zeffiro, & Milad, 2011), ventromedial

prefrontal cortex, and hippocampus (e.g., Moustafa et al., 2013) in anxiety and fear conditioning processes.

Methods

Participants

Participants were right-handed young adults aged 18-19 recruited via advertisements and social media. Exclusion criteria included contraindications to fMRI (i.e., claustrophobia, irremovable metal), smoking cigarettes, consumption of more than 10 caffeinated beverages per day, traumatic brain injury, psychosis, and severe substance abuse. To increase the probability of elevated scores on anxiety measures, participants were oversampled for neuroticism.

Apparatus and Stimuli

Participants completed a widely-utilized differential Pavlovian Fear Learning Task (Milad et al., 2009; Milad et al., 2007). Stimuli were presented using E-prime software (Schneider, Eschman, & Succolotto, 2002). Participants were presented with a context picture of an office containing a lamp, which changes colors to represent each CS. Three colors of the lamp served as CSs: A CS+U which predicted the US 60**%** of the time and was never extinguished, a CS+E which predicted the US 60% of the time and is extinguished, and a CS- which never predicted the US. The colors that represent the CS+U, CS+E and CS- were counterbalanced. The US was a shock that will be calibrated to each individual participant to reach a level the participant rates his or her discomfort as a 7 out of 10. Participants received a total of 10 pulses of 1ms pulse duration delivered at

20Hz frequency (total shock duration = 500ms). Shocks were delivered using a DS7a constant current high voltage stimulator (Digitimer Ltd, England).

Measures

A Prisma 3.0 Tesla MRI scanner with a 64-channel gradient head coil was used (Siemens Medical Systems, Iselin, New Jersey). We acquired high resolution structural images (T1-weighted) using a magnetized prepared rapid acquisition gradient echo (MPRAGE) sequence containing 0.8mm isotropic voxels, TR/TE/flip angle=2300ms/2.99ms/7°, FOV= 256mm^2, 208 slices. Using the Siemens AutoAlign function, blood oxygenation level-dependent (BOLD, T2*-weighted) functional images were acquired parallel to the AC-PC line, containing 2mm isotropic voxels, TR/TE/flip angle=2000ms/25ms/80°, FOV = 208mm^2, 64 slices, 380 volumes (per task phase).

Skin conductance response (SCR) and heart rate (HR) were measured using a Biopac MP100A-CE unit with one GSR100C amplifier and one pulse oximeter OXY100C amplifier attached, and Acqknowledge 3.9.2 software (Biopac Systems, Inc., Goleta, CA). Two disposable EDA Isotonic Gel electrodes were placed on the medial phalanx of the index and middle fingers of the non-dominant hand. Baseline SCRs were calculated as the average skin conductance (measured in microsiemens) during the 2 seconds prior to CS presentation, with the peak calculated as the maximum skin conductance during CS presentation. Skin conductance values were range-corrected to the maximum SCR to the US and square-root transformed. The GSR amplifier was set to direct current and has a sensitivity of 5 microohms/V, with a 1.0-Hz low-pass filter. A pulse oximeter was

placed on the ring finger of the non dominant hand. Data were acquired at 2000 samples per second. Heart rate was calculated as the mean heart rate in the 6 seconds following CS presentation. Heart rate response was calculated as the change in heart rate following stimulus onset.

We examined whether discrimination was associated with the Fear index from the tri-level model (Prevoneau et al., 2010), which is calculated using items from the Social Phobia Scale (Mattick & Clarke, 1998; items 5, 7, 9), the Fear Survey Schedule (Geer, 1965; items 4, 5, 6) and the Albany Panic and Phobia Questionnaire (items 6, 10, 21; Rapee, Craske, & Barlow, 1994/1995). This measure of fear provides a transdiagnostic measure of what is common to social fears, anxious arousal, interoceptive/agoraphobia fears, specific fears, and worry independent of general distress and anhedonia-apprehension. Further information on the tri-level model can be found in Prevoneau et al. (2010).

Procedure

Study procedures occurred over 2 separate visits. On Day 1, shock electrodes were placed on the participant's bicep and skin conductance electrodes were placed on the medial phalanx of the non-dominant hand. A pulse oximeter was placed on the participant's non-dominant ring finger. Across all phases of the study, the context was presented for 9 seconds overall: 6 seconds in the absence of the CS and 3 seconds with the CS presented within the context. The mean inter-trial interval was 15 seconds (range: 12-18 seconds).

Participants first completed the Habituation phase, which consisted of 4 presentations of the CS+U, CS+E, and CS- either in the Acquisition context or the

Extinction context. In the Acquisition phase, the Acquisition context was presented and the CS+ and CS+E predict the shock 60% of the time while the CS- never predicted the shock. The US was presented immediately after the offset of the CS+ and CS+E. The Acquisition phase included 8 CS+ trials, 8 CS+E trials, and 16 CS- trials. Subsequently, participants completed the Extinction phase, in which the CS+E and the CS- were each presented 16 times in the absence of the US. Participants then provided ratings of each CS, rating whether the risk of shock following each CS was low, moderate, or high.

On Day 2, participants returned and completed Extinction Recall, in which 8 CS+E, 8 CS+, and 16 CS- were presented in the extinction context. No shocks were delivered during the Extinction Recall phase. Participants repeat ratings of each CS, rating whether the risk of shock following each CS was low, moderate, or high.

Analysis

Prior to analysis of fMRI data, raw dicom files were converted to NIFTI format using dcm2nii (MRIcroN, http://www.cabiatl.com/mricro/mricron/dcm2nii.html). Data was processed and analyzed using FSL (FMRIB's Software Library, www.fmrib.ox.ac.uk/fsl). Using FAST, (FMRIB's Automated Segmentation Tool) (Zhang, Brady, & Smith, 2001). We corrected structural data for spatial intensity variations (bias field correction) and, using optiBET (optimized brain extraction), performed brain extraction (Lutkenhoff et al., 2014).

Following brain extraction, we excluded runs with >10% outliers (75^{th} percentile + 1.5 times interquartile range) from group analysis. To identify outliers, we assessed functional data for outlier volumes (75^{th} percentile +1.5 times interquartile range) based on framewise displacement (average of rotation and translation parameter differences, using weighted scaling (Power, Barnes, Snyder, Schlaggar, & Petersen, 2012) as implemented in the fsl motion outliers function (FSL). We censored outlier volumes in first level analyses by including a regressor with a single time point corresponding to each outlying volume. Functional data was brain extracted using BET (Brain Extraction Tool, FSL) (Smith, 2002) and bias field corrected using N4 Bias Field Correction, run twice (ANTS registration suite (Tustison et al., 2010)).

We completed fMRI data processing using FEAT (FMRI Expert Analysis Tool) Version 6.00. Registration to high resolution structural space images was completed using FLIRT (Jenkinson, Bannister, Brady, & Smith, 2002; Jenkinson & Smith, 2001). We further refined registration from high resolution structural to space using FNIRT nonlinear registration (Andersson, Jenkinson, & Smith, 2007a, 2007b). We completed the following pre-statistics processing steps: motion correction using MCFLIRT (Jenkinson et al., 2002), slice-timing correction using Fourier-space time-series phase-shifting, spatial smoothing using a Gaussian kernel of FWHM 4.0mm, grand-mean intensity normalisation of the entire 4D dataset by a single multiplicative factor, and high-pass temporal filtering (0.01Hz) to remove low frequency artifacts.

In first-level analyses, we included regressors of interest and temporal derivatives, six motion regressors and additional regressors to censor outlying volumes. Regressors of interest included CS+, CS-, Context, and Shock.

We selected *a priori* ROIs as follows: 1) Predicting increased activation to the CS+ relative to the CS-: amygdala, dorsal anterior cingulate cortex, and insula, and 2) Predicting deactivation to the CS- relative to the CS+: ventromedial prefrontal cortex and hippocampus. The amygdala, insula, dorsal anterior cingulate, and hippocampus were anatomically defined using the Harvard-Oxford Anatomical Atlas. Masks were thresholded at >50% probability and binarized. Data extraction was performed by first registering each ROI mask into subject space. Transformation matrices from whole brain registration were used to generate sets of subject-specific ROIs using FLIRT (FSL), which were subsequently thresholded at 0.5 and re-binarized. The command FSLSTATS was then used to extract the mean zstat for each ROI for each subject. The ventromedial prefrontal cortex was defined functionally and was obtained from a whole-brain mask from Fullana et al., 2016, using a 5mm sphere and a 10mm sphere (MNI coordinates: -2, 56, -14). For mediation analysis using vmPFC activation as an outcome, the last 4 trials of extinction and the first 4 trials of recall were used.

A 2 (CS type: CS+, CS-) x 4 (Phase: Beginning of Acquisition, End of Acquisition, End of Extinction, Recall) repeated measures ANOVA assessed for differential acquisition, extinction, and recall. Discrimination was calculated as CS+/(CS+ + CS-) for regions in which CS+ activation exceeded CS- activation and as CS-/CS+ + CS-) for regions in which CS- activation exceeded CS+ activation.

Correlations between ROI activation/deactivation and Fear scores were run in addition to correlations between ROI activation/deactivation and SCR and heart rate at the last trial of extinction and over the average of the first two trials of extinction recall. Additionally, vmPFC activation to CS+ and CS- relative to implicit baseline at the end of extinction (last 4 trials) and the beginning of recall (first 4 trials) was examined as an outcome, in line with research implicating vmPFC in extinction learning (Linnman et al., 2012a). Finally, mediation analyses using PROCESS (Hayes, 2009; 2012) determined whether discrimination in each region of interest mediated the relationship between Fear and Extinction or the relationship between Fear and Extinction Recall. The present analyses utilized PROCESS Model 4 and bootstrap analyses for mediation. Bootstrap estimates used 50,000 repetitions to construct 95% bias-corrected confidence intervals.

Results

Acquisition, Extinction, and Fear Recall

Contingency Awareness.

A paired samples t test on contingency ratings showed that participants rated the CS+ as more predictive of shock than the CS- (M=2.76, SE=.047) both for the unextinguished CS+ (M=1.64, SE=.057, t(126)=-14.538, p<.001) and for the extinguished CS+ (M=1.87, SE=.047, t(126)=-12.105, p<.001).

Skin Conductance.

For SCR, there was no main effect of CS type (F(1, 75)=.021, p=.886, η_p^2 = .000). There was a main effect of phase (F(2.040, 153.033)=14.351,

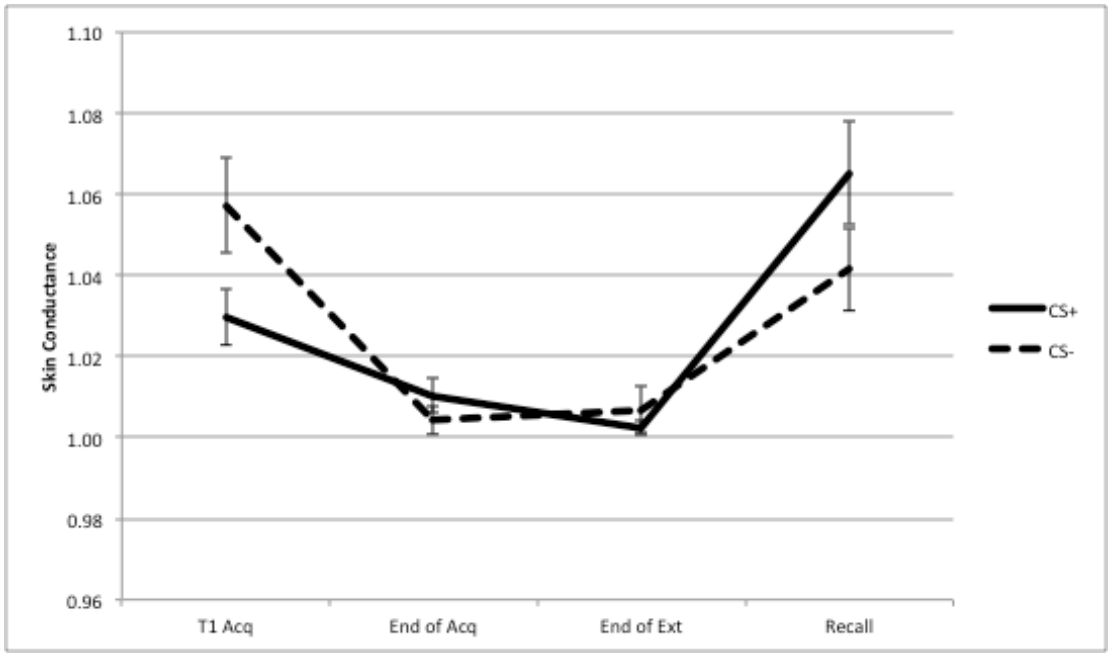
$p<.001$, $\eta_p^2 = .161$). There was a CS type x phase interaction ($F(2.349, 176.191)=10.720$, $p<.001$, $\eta_p^2 = .125$).

Planned comparisons showed that SCR to the CS+ at the beginning of Acquisition (M=.1030, SE=.007) was significantly lower than SCR to the CS- at the beginning of Acquisition (M=1.057, SE=.012, p=.003). Additionally, at Recall, SCR to the CS+ (M=1.065, SE=.013) was significantly higher than SCR to the CS- (M=1.041, SE=.010, p=.006). Other CS+/- comparisons at each phase were nonsignificant (p's>.285).

SCR to the CS+ was significantly greater at the beginning of Acquisition (M=1.030, SE=.007) than at the end of Acquisition (1.010, SE=.004, p=.004). SCR to the CS+ was significantly greater at the end of Acquisition than at the end of Extinction (M=1.002, SE=.002, p=.003). SCR to the CS+ was significantly lower at the end of Extinction than at Recall (M=1.065, SE=.013, p<.001).

SCR to the CS- was significantly higher at the beginning of Acquisition (M=1.057, SE=.012) than at the end of Acquisition (=1.004, SE=.004, p<.001). SCR to the CS- at the end of Acquisition was not significantly different from SCR to the CS- at the end of Extinction (p=.725). SCR to the CS- at the end of Extinction (=1.007, SE=.006) was significantly lower than SCR to the CS- at Recall (M=1.041, SE=.010, p=.003).

Figure 1: SCR



Due to error, the first 2 trials viewed by participants were always the CS-. We therefore reran fear conditioning analyses dropping these first 2 trials of the CS-. In this case, there was a main effect of CS type ($F(1, 75)=12.387$, $p=.001$, $\eta_p^2=.142$), a main effect of phase ($F(1.553, 116.483)=14.833$, $p<.001$, $\eta_p^2=.165$), and a CS type x phase interaction ($F(3, 225)=5.632$, $p=.001$, $\eta_p^2=.070$).

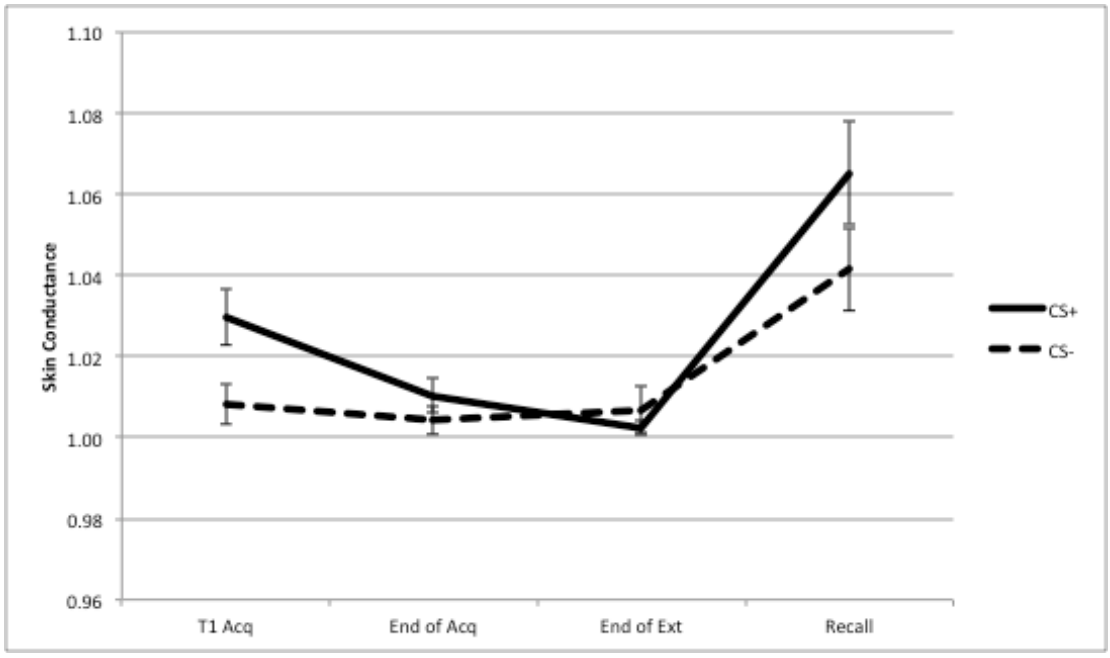
Planned comparisons showed that at the beginning of Acquisition, SCR to the CS+ (M=1.030, SE=.007) was significantly greater than SCR to the CS-

(M=1.008, SE=.005, p=.001). At Recall, SCR to the CS+ (M=1.065, SE=.013) was also greater than SCR to the CS- (M=1.041, SE=.010, p<.001). Other CS+/- comparisons were nonsignificant (p's>.285).

For the CS+, SCR at the beginning of Acquisition (M=1.030, SE=.007) was significantly higher than SCR at the end of Acquisition (M=1.010, SE=.004, p=.004). SCR at the end of Acquisition was significantly higher than SCR at the end of Extinction (M=1.002, SE=.002, p=.021). SCR at the end of Extinction was significantly lower than SCR at Recall (M=1.065, SE=.013, p<.001).

For the CS-, SCR at the beginning of Acquisition was not significantly different from SCR at the end of Acquisition (p=.531). SCR at the end of Acquisition was not significantly different from SCR at the end of Extinction (p=.725). SCR at the end of Extinction (M=1.007, SE=.006) was significantly lower than SCR at Recall (M=1.041, SE=.010, p<.001). Because this change does not demonstrate improved evidence of fear acquisition, all trials were used in further analyses.

Figure 2: SCR not including first 2 trials of CS-



Heart Rate.

For Heart Rate, there was no main effect of CS type ($F(1, 52)=.145$, $p=.705$, $\eta_p^2=.003$). There was a main effect of phase ($F(3, 156)=6.474$, $p<.001$, $\eta_p^2=.111$) and a CS type x phase interaction ($F(2.465, 2.465, 128.159)=3.808$, $p=.017$, $\eta_p^2=.068$).

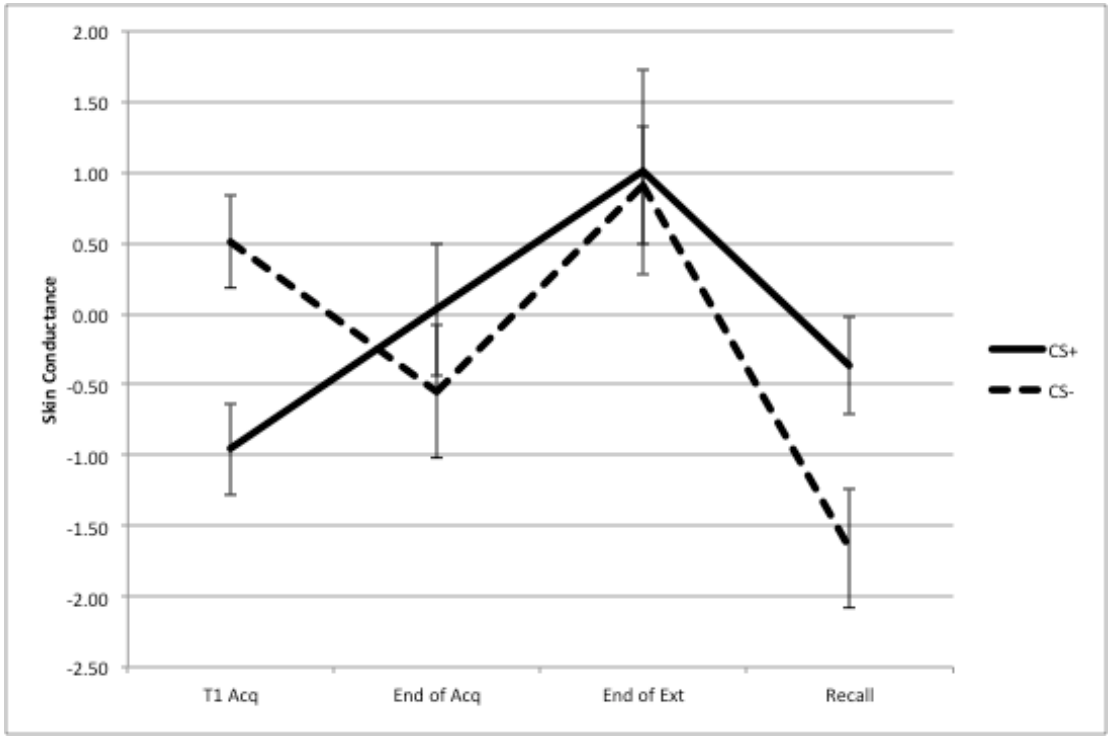
At the beginning of Acquisition, heart rate response to the CS+ (M=-.956, SE=.325) was significantly greater than heart rate response to the CS- (M=.512, SE=.328, p=.001). At recall, heart rate response to the CS+ (M=-.366, SE=.343) was significantly higher than heart rate response to the CS- (M=-1.656, SE=.424, p=.012). Other CS+/- comparisons were nonsignificant (p's>.353).

For the CS+, heart rate response was marginally lower at the

beginning of Acquisition (M=-.956, SE=.325) than at the end of Acquisition (M=.032, SE=.468, p=.091). It was not significantly different from the end of Acquisition to the end of Extinction (p=.232) but was marginally higher at the end of Extinction (M=1.004, SE=.729) than at Recall (M=-.366, SE=.343, p=.088).

For the CS-, heart rate response at the beginning of Acquisition (M=.512, SE=.328) was significantly higher than heart rate response at the end of Acquisition (M=-.551, SE=.468, p=.046). It was significantly lower at the end of Acquisition than at the end of Extinction (M=.912, SE=.417, p=.020). It was significantly higher at the end of Extinction than at Recall (M=-1.656, SE=.424, p<.001).

Figure 3: Heart Rate



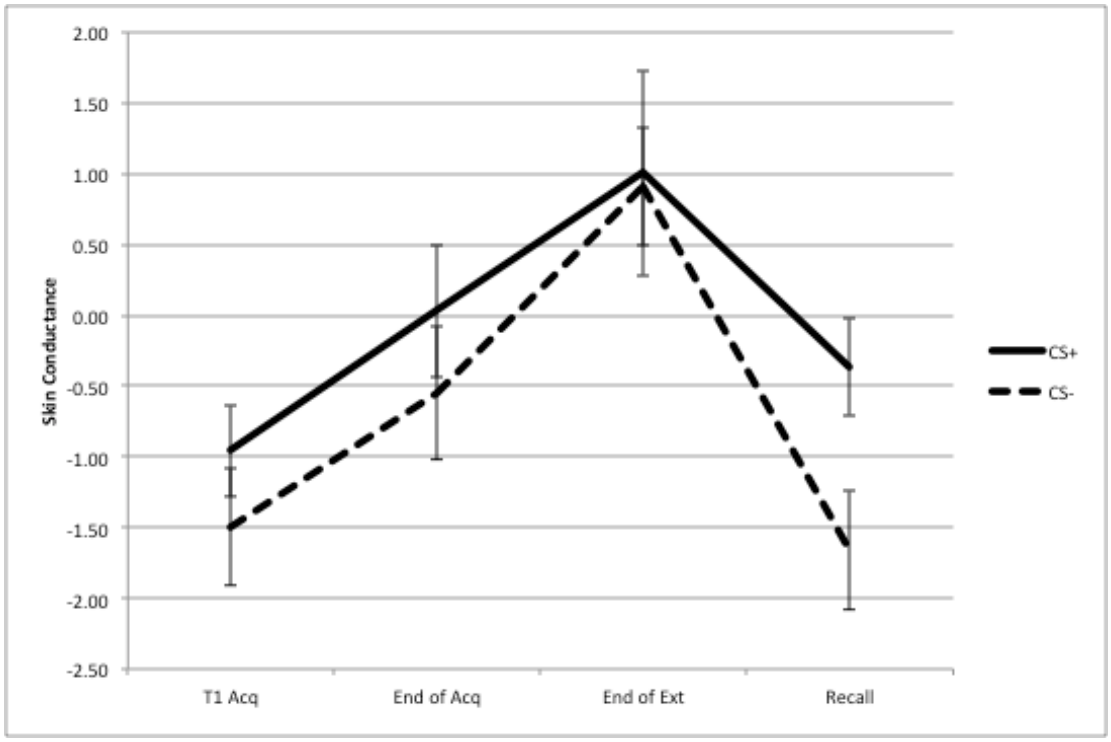
Due to error, the first 2 trials viewed by participants were always the CS-. We therefore reran fear conditioning analyses dropping these first 2 trials of the CS-. In this case, there was a main effect of CS type ($F(1, 52)=4.093$, $p=.048$, $\eta_p^2 = .073$), a main effect of phase ($F(3, 156)=8.707$, $p<.001$, $\eta_p^2 =.143$). There was no CS type x phase interaction ($F(2.538, 131.967)=.624$, $p=.574$, $\eta_p^2 =.012$).

There were no differences in CS+/CS- at any phase with the exception of Recall, where heart rate response to the CS+ (M=-.366, SE=.343) was significantly higher than heart rate response to the CS- (M=-1.656, SE=.424, p=.012).

For the CS+, heart rate response was marginally lower at the beginning of Acquisition (M=-.956, SE=.325) compared to the end of Acquisition (M=.032, SE=.468, p=.091). Heart rate response was not significantly different from the end of Acquisition to the end of Extinction (p=.232). It was marginally higher at the end of Extinction (M=1.004, SE=.729) compared to Recall (M=-.366, SE=.343, p=.088).

For the CS-, heart rate response was not significantly different from the beginning of Acquisition to the end of Acquisition (p=.140). It was significantly lower at the end of Acquisition (M=-.551, SE=.468) compared to the end of Extinction (M=.912, SE=.417, p=.020). It was significantly higher at the end of Extinction compared to Recall (M=-1.656, SE=.424, p<.001).). Because this change does not demonstrate improved evidence of fear acquisition, all trials were used in further analyses.

Figure 4: Heart Rate Not Including First 2 Trials of CS- Acquisition



Discrimination

Paired samples t tests were run to determine whether significant discrimination occurred in each ROI. In left amygdala, the CS+ (M=-.20, SE=.043) showed greater deactivation relative to implicit baseline than the CS- (M=-.10, SE=.043, t(105)=-2.354, p=.020). In right amygdala, the CS+ ((M=-.20, SE=.049) showed greater deactivation relative to implicit baseline than the CS- (M=-.01, SE=.045, t(105)=-4.601, p<.001). Due to failure to demonstrate CS+>CS- activation in amygdala in line with previous research, (Buchel et al., 1998; Buchel et al., 1999; LaBar et al., 1998; Cheng, Knight, Smith, & Helmstetter, 2006), meditational analyses of discrimination in the amygdala are omitted.

In left insula, the CS+ (M=.17, SE=.052) showed greater activation than the CS- (M=.05, SE=.041, t(105)=2.339, p=.021). In right insula, the CS+ (M=.14,

SE=.051) showed marginally greater activation than the CS- (M=.05, SE=.040, t(105)=1.857, p=.066). In dACC, the CS+ (M=.30, SE=.-66) showed greater activation than the CS- (M=-.03, SE=.048, t(105)=5.324, p<.001). In left hippocampus, the CS+ showed greater deactivation (M=-.25, SE=.043) than the CS- (M=.00, SE=.043, t(105)=-6.293, p<.001). In right hippocampus, the CS+ (M=-.29, SE=.042) showed greater deactivation than the CS- (M=-.02, SE=.037, t(105)=-7.054, p<.001). In 5mm vmPFC, the CS+ (M=-.62, SE=.088) showed greater deactivation than the CS- (M=-.17, SE=.074, t(105)=-5.388, p<.001). In 10mm vmPFC, the CS+ (M=-.42, SE=.061) showed greater deactivation than the CS- (M=-.17, SE=.054, t(105)=-4.602, p<.001).

To determine whether discrimination in each region of interest was driven by activation to CS+ or CS-, a median split followed by independent samples t tests on discrimination were run. In left amygdala, individuals who showed activation to the CS+ above the median (M=.498, SE=.001) showed significantly lower CS->CS+ discrimination than those who showed left amygdala activation to the CS+ (M=0.507, SE=.001, t(104)=-4.918, p<.001). Individuals who showed activation to the CS- above the median (M=.507, SE=.001) showed significantly higher discrimination than those who showed activation to CS- below the median (M=.499, SE=.001, t(104)=3.997, p<.001).

In right amygdala, individuals who showed activation to CS+ above the median (M=.501, SE=.001) showed significantly lower CS->CS+ discrimination than individuals who showed activation to CS+ below the median (M=.509, SE=.002, t(104)=-4.339, p<.001). Individuals who showed activation to CS- above the median

(M=.509, SE=.001) showed significantly higher discrimination than individuals who showed activation to CS- below the median (M=.501, SE=.002, t(93.014)=3.740, p<.001).

In left insula, individuals who showed CS+ activation above the median (M=.510, SE=.001) showed significantly higher discrimination than individuals who showed CS+ activation below the median (M=.495, SE=.002, t(104)=-7.077, p<.001). Individuals who showed activation to CS- above the median (M=.498, SE=.001) showed significantly lower discrimination than individuals how showed activation to CS- below the mean (M=.507, SE=.002, t(104)=3.626, p<.001).

In right insula, individuals who showed CS+ activation above the median (M=.509, SE=.001) showed significantly higher discrimination than individuals who showed CS+ activation below the median (M=.495, SE=.01, t(104)=-7.33, p<.001). Individuals who showed CS- activation above the median (M=.498, SE=.001) showed significantly lower discrimination than individuals who showed CS- activation below the median (M=.506, SE=.002, t(104)=3.397, p=.001).

In dACC, individuals who showed activation to the CS+ above the median (M=.515, SE=.002) showed significantly higher discrimination than individuals who showed activation to the CS+ below the median (M=.500, SE=.002, t(97.864)=-5.802, p<.001). Individuals who showed activation to the CS- above the median (M=.505, SE=.002) showed significantly lower discrimination than individuals who showed activation to CS- below the median (M=.511, SE=.002, t(104)=2.094, p=.039).

In left hippocampus, individuals who showed activation to CS+ above the median (M=.501, SE=.001) showed significantly lower discrimination than individuals who showed activation to the CS+ below the median (M=.512, SE=.001, t(104)=6.128, p<.001). Individuals who showed activation to CS- above the median (M=.509, SE=.001) showed significantly higher discrimination than individuals who showed activation to CS- below the median (M=.504, SE=.001, t(104)=-2.644, p=.009).

In right hippocampus, individuals who showed activation to CS+ above the median (M=.502, SE=.001) showed significantly lower discrimination than individuals who showed activation to the CS+ below the median (M=.512, SE=.001, t(104)=5.385, p<.001). Individuals who showed activation to CS- above the median (M=.509, SE=.001) showed significantly higher discrimination than individuals who showed activation to CS- below the median (M=.504, SE=.001, t(104)=-2.494, p=.014).

In vmPFC using a 5mm sphere, individuals who showed activation to CS+ above the median (M=.500, SE=.002) showed significantly lower discrimination than individuals who showed activation to CS+ below the median (M= .524, SE=.003, t(104)=6.337, p<.001). Individuals who showed activation to CS- above the median (M=.520, SE=.003) showed significantly higher discrimination than individuals who showed activation to CS- below the median (M=.504, SE=.003, t(104)=-3.936, p<.001).

In vmPFC using a 10mm sphere, individuals who showed activation to CS+ above the median (M=.498, SE=.002) showed significantly lower discrimination

than individuals who showed activation to CS+ below the median (M=.515, SE=.002, t(104)=5.878, p<.001). Individuals who showed activation to CS- above the median (M=.513, SE=.002) showed significantly higher discrimination than individuals who showed activation to CS- below the median (M=.500, SE=.002, t(104)=-4.846, p<.001).

Correlations

Fear.

The Fear index was marginally positively correlated with discrimination in dACC (r(103)=.192, p=.052). All other ROI discrimination correlations with Fear were nonsignificant (all p's > .221).

SCR.

SCR to the CS+ at the end of Extinction was not significantly correlated with any ROI discrimination (all p's > .506). SCR to the CS- at the end of Extinction was not significantly correlated with any ROI discrimination (all p's > .509).

SCR to the CS+ at Recall was significantly positively correlated with higher CS->CS+ discrimination in vmPFC using a 10mm sphere (r(66)=.246, p=.047) and marginally positively correlated with CS->CS+ discrimination in vmPFC using a 5mm sphere (r(66)=.235, p=.058). All other ROI discrimination correlations with SCR to the CS+ at Recall were nonsignificant (all p's>.385). SCR to the CS- was not correlated with any ROI discrimination (all p's > .484).

Heart Rate.

Heart rate to the CS+ at the end of Extinction was significantly positively correlated with CS->CS+ discrimination in right hippocampus (r(71)=.260, p=.029).

All other correlations between heart rate to the CS+ at the end of Extinction and ROI discrimination were nonsignificant (all p's >.099). Heart rate to the CS- at the end of Extinction was marginally positively correlated with dACC discrimination (r(71)=.209, p=.081). Heart rate to the CS- at the end of Extinction was not correlated with any other ROI discrimination (all p's > .247).

Heart rate to the CS+ at recall was marginally negatively correlated with CS->CS+ discrimination in left hippocampus (r(73)=-.212, p=.071). Heart rate to the CS+ at Recall was not correlated with any other ROI discrimination (all p's > .139). Heart rate to the CS- was not correlated with any ROI discrimination (all p's > .228).

Discrimination Mediation between Fear and Extinction/Recall

There was no mediation of CS+>CS- or CS->CS+ discrimination in any ROI on the relationship between fear and SCR or Heart Rate at the end of Extinction or at Recall for the CS+ or for the CS-. There was also no mediation when testing CS+>CS- and CS->CS+ contrasts as mediators of the relationship between fear and these outcomes.

Discussion

The current study sought to demonstrate whether discrimination between a CS+ and CS- as reflected by differential activation in particular regions of interest may be associated with fear, extinction, and retention of extinction learning. There was no evidence for a relationship between fear and discrimination, discrimination and extinction or extinction retention, or between fear and extinction or extinction retention.

Evidence for successful fear conditioning, extinction, and return of fear was inconsistent. Successful fear acquisition was supported by contingency awareness ratings, which showed increased expectancy of the shock in response to the CS+ relative to the CS-. However, differentiation between CS+ and CS- at the end of acquisition was not reflected in either skin conductance response or heart rate. Skin conductance response to the CS+ declined across acquisition, potentially reflecting habituation to the US and to the fMRI environment. This may suggest insufficient fear learning, as only 60% of trials were reinforced. This explanation is contradicted by evidence for CS+/- discrimination in regions of interest and in contingency ratings. Alternatively, participants may have exhibited a fear response to context onset prior to the onset of the CS+ or CS, reflecting context conditioning regardless of the CS presented (Marschner et al., 2008). A design maintaining context throughout acquisition rather than an intermittent fixation cross may prevent this in future studies. Heart rate marginally increased across acquisition, and contingency awareness ratings for CS+ exceeded ratings for CS-, providing evidence for successful fear conditioning. Decline in skin conductance may therefore represent ambient temperature or decreased skin conductance following limited movement in the scanner. A programming error leading to consistent presentation of the CS- at the beginning of the task may provide an explanation for these results, however follow-up analyses excluding early trials did not produce notably different results. Overall, while subjective ratings demonstrate clear learning, results of physiological measures should be interpreted with caution. Skin conductance response to the CS+ was increased at the end of acquisition compared to the end of extinction, providing

support for successful extinction. However, heart rate did not reflect fear extinction. Skin conductance data showed increased response to the CS+ at recall compared to the end of extinction, demonstrating return of fear. Heart rate data, however, did not provide support for return of fear.

Evidence for hypothesized CS+/CS- discrimination was mixed. Both left and right amygdala showed deactivation to both the CS+ and CS- during acquisition relative to implicit baseline, and deactivation to the CS+ was greater than deactivation to the CS-. It is possible that this reflects uncertainty in response to the CS- or insufficient reinforcement (Dunsmoor, Bandettini, & Knight, 2007).

Left and right insula, which are associated with excitation of fear (Sehlmeyer et al., 2009; Fullana et al., 2016), showed increased activation in response to the CS+ relative to the CS-. Additionally, dACC showed increased activation in response to the CS+ relative to the CS-, consistent with previous findings that dACC may have a role in fear expression (Milad et al., 2007). Examining participants whose activation fell above and below the median suggested that, for regions in which activation to CS+ exceeded activation to CS-, individuals with greater activation to CS+ showed greater discrimination and individuals with lesser activation to CS- showed greater discrimination. For regions in which activation to CS- is hypothesized to exceed activation to CS+, individuals with lesser activation to CS+ showed greater discrimination and individuals with greater activation to CS- showed greater discrimination. From this evidence we are unable to conclude whether greater discrimination is driven primarily by hyperactivation to CS+ or hypoactivation to CS-.

Consistent with the findings of Fullana et al (2016), hippocampus and vmPFC each showed greater deactivation to the CS- relative to the CS+. This may represent increased default network activity in the presence of a neutral cue relative to a danger cue, which may provide support for contextualization of safety memories, constrain fear generalization, and increase adaptive fear learning (Marstaller, Burianova, & Reutens, 2017).

Our results did not provide support for a meditational role for discrimination between fear and extinction and extinction recall. Occasional significant a and b paths occurred in less than 5% of analyses and likely represent Type I error. Fear did not predict discrimination and discrimination did not predict outcomes of interest. The lack of evidence suggesting that the fear index of the trilevel model (Prevoneau et al., 2010) may represent Type II error, or may suggest that a more specific measure is needed to capture the relationship between fear and discrimination.

One important limitation of the present study is that it did not provide evidence that the stimuli used to represent context were indeed processed as contexts and not as discrete stimuli. For example, hippocampus may be necessary but not sufficient for processing context while the discrete stimuli are processed by other structures (Huff et al., 2011). For example, structures compensating for hippocampal damage acquire learning discrete cues (Wiltgen, Sanders, Anagnostaras, Sage, & Fanselow, 2006). In a phenomenon known as immediate shock deficit, a minimum processing time is necessary for context conditioning to occur but not for elemental cues (Wiltgen, Sanders, Anagnostaras, Sage, & Fanselow, 2006). Therefore, to determine whether these stimuli represent contexts, we would need to determine

whether a minimum processing time is necessary for conditioning to occur. The present study did not test this.

In sum, the present study provides some support for differentiation between a CS+ and CS- in the hypothesized direction for particular regions of interest. However, limitations include potential confounding variables on physiological indices including ambient temperature and habituation. Additionally, further research should clarify the conditions under which amygdala deactivation may occur during acquisition and potential explanations for increased deactivation to CS+ relative to CS-. Finally, future studies should continue explore correlates of discrimination in both fear network and default mode network regions of interest.

DISCUSSION

This set of studies provides information regarding the role of discrimination between a CS+ and a CS- in fear learning and potential factors that may predict the ability to discriminate. The results of Study 1 demonstrate a relationship between trait anxiety and discrimination and the potential ability of increased discrimination to facilitate extinction and retention of extinction learning. Study 2 provides limited confirmation of the relationship between discrimination and fear learning and demonstrates that a mood induction prior to acquisition does not impact the ability to differentiate between an CS+ and a CS-. Study 3 provides evidence of differentiation between a CS+ and CS- both in regions that have been associated with the learning and expression of fear and in default mode network regions that may be associated with processing safety or neutral cues.

Each study examined variables that may be associated with discrimination between a CS+ and CS-. Consistent with previous research (Lissek et al., 2014), Study 1 demonstrates that trait anxiety as measured by the BIS is associated with

the extent to which an individual can differentiate between a danger cue and a neutral cue. Study 2 shows that, while negative mood arising from exposure to an aversive US may potentially decrease discrimination, no mood induction prior to fear acquisition appears to be associated with discrimination. Acquisition itself may serve as a negative mood induction and impact discrimination. Differences in positive and negative mood prior to acquisition were no longer present following acquisition, suggesting that acquisition acts as a negative mood induction, however there was no relationship between mood change during acquisition and discrimination. Additionally, mood following extinction or at recall was not related to fear in response to the CS+ or CS-. Study 3 measured fear based on the trilevel model (Prevoneau et al., 2010), which provides a transdiagnostic measure of what is common to social fears, anxious arousal, interoceptive/agoraphobia fears, specific fears, and worry independent of general distress and anhedonia-apprehension. This study failed to demonstrate a link between this measure and discrimination; there was no association between fear and the ability to distinguish between a CS+ and CS-. It is possible that this fear measure is too broad to capture this particular phenomenon, which may be specific to particular types of fear such as those associated with panic disorder (Lissek et al., 2010).

All three studies examined the relationship between discrimination and fear learning-related outcomes such as extinction and return of fear. Study 1 demonstrated a link between discrimination and two types of return of fear: spontaneous recovery and context renewal. This study also demonstrated that increased discrimination is associated with lower fear ratings not only for the CS+

but also for the CS-. This suggests that individuals who show increased ability to discriminate between a neutral and an unsafe cue may be less likely to show inappropriate fear in response to neutral cues. Study 2 provided limited confirmation of the association between increased discrimination and decreased fear following extinction; US expectancy and skin conductance among individuals with higher discrimination were decreased among individuals with higher discrimination during acquisition than among individuals with lower discrimination. Study 3 examined regions that have been implicated in CS+>CS- discrimination including amygdala, insula, and dACC (Buchel et al., 1998; Buchel et al., 1999, Cheng, Knight, Smith, & Helmstetter, 2006; Fullana et al., 2016 LaBar et al., 1998) as well as regions implicated in CS->CS+ discrimination including hippocampus and vmPFC (Fullana et al., 2016). While discrimination was observed in the expected direction for most regions, amygdala showed deactivation to both CSs and greater deactivation to CS+ than CS-. Additionally, there was no link between discrimination in any region of interest and extinction or return of fear as measured by physiological indices or vmPFC activation.

Each of these studies included several limitations. Study 1 included a small sample. Additionally, fear ratings were collected following context renewal and spontaneous recovery phases, potentially reflecting fear following re-extinction that took place during these phases and not reflecting fear upon initial exposure to conditional stimuli. In Study 2, skin conductance findings did not demonstrate a clear increase in responsivity to the CS+ from the beginning to the end of acquisition. This may reflect a failure of the CS+ to evoke a fear response, however

it is more likely that it reflects elevated apprehension at the beginning of the task before associative learning took place. Additionally, heart rate did not provide evidence of successful fear learning. Finally, physiological indices in Study 3 should be interpreted with caution due to failure of these measures to demonstrate clear differential acquisition and extinction.

Results from this group of studies yield interesting potential clinical implications. For example, further investigation of the influences on discrimination may inform future interventions and potential training in discrimination for anxious individuals. Measures of discrimination may help to identify individuals with a predisposition to anxiety disorders. Finally, discrimination may provide an informative clinical outcome to assess treatment progress in anxious individuals.

Future research should examine other potential influences on discrimination, including attentional control and clinical status. Further investigation of potential methods to improve discrimination may provide an avenue toward prevention and treatment of anxiety disorders.

Appendix A: Study 2 Tables

Table 1. Group and Extinction SCR

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.03	.07	-.10	.17	
Neu vs Pos → Discrimination (a2 path)	.01	.06	-.12	.14	
Neg vs Neu → Discrimination (a3 path)	.02	.07	-.11	.15	
Extinction SCR during CS+					
Discrimination → Extinction (b path)	-.93	.54	-2.01	.15	
Neg v Pos →Discrimination → Extinction (Indirect 1)	-.03	.08	-.32	.05	
Neg v Pos → Extinction (Direct 1)	.50	.31	-.12	1.12	
Neg v Pos → Extinction (Total 1)	.41	.29	-.16	.99	
Neu v Pos →Discrimination → Extinction (Indirect 2)	-.01	.07	-.24	.09	
Neu v Pos → Extinction (Direct 2)	.44	.30	-.17	1.04	
Neu v Pos → Extinction (Total 2)	.39	.28	-.17	.96	
Neg v Neu →Discrimination → Extinction (Indirect 3)	-.02	.07	-.26	.07	
Neg v Neu → Extinction (Direct 3)	.06	.31	-.55	.68	
Neg v Neu → Extinction (Total 3)	-.02	.29	-.59	.55	
Extinction SCR during CS-					
Discrimination → Extinction (b path)	-.03	.13	-.28	.23	
Neg v Pos →Discrimination → Extinction (Indirect 1)	.00	.01	-.03	.01	
Neg v Pos → Extinction (Direct 1)	.21	.07	.07	.36	*
Neg v Pos → Extinction (Total 1)	.16	.07	.02	.30	*
Neu v Pos →Discrimination → Extinction (Indirect 2)	.00	.01	-.02	.01	
Neu v Pos → Extinction (Direct 2)	.06	.07	-.08	.20	
Neu v Pos → Extinction (Total 2)	.03	.07	-.11	.16	
Neg v Neu →Discrimination → Extinction (Indirect 3)	.00	.01	-.02	.01	
Neg v Neu → Extinction (Direct 3)	.16	.07	.01	.30	*
Neg v Neu → Extinction (Total 3)	-.13	.07	-.27	.00	

Table 2. Group and Context Renewal SCR

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.03	.07	-.10	.17	
Neu vs Pos → Discrimination (a2 path)	.01	.06	-.12	.14	
Neg vs Neu → Discrimination (a3 path)	.02	.07	-.11	.15	
SCR during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	-.32	.20	-.72	.09	
Neg v Pos →Discrimination → CR (Indirect 1)	.03	.03	-.01	.12	
Neg v Pos → CR (Direct 1)	.08	.12	-.16	.32	
Neg v Pos → CR (Total 1)	.10	.11	-.13	.33	
Neu v Pos →Discrimination → CR (Indirect 2)	.01	.03	-.03	.08	
Neu v Pos → CR (Direct 2)	.03	.11	-.20	.25	
Neu v Pos → CR (Total 2)	.04	.11	-.17	.25	
Neg v Neu →Discrimination → CR (Indirect 3)	.02	.03	-.02	.11	
Neg v Neu → CR (Direct 3)	.05	.11	-.17	.27	
Neg v Neu → CR (Total 3)	-.06	.11	-.27	.15	
All Context Renewal Trials					
Discrimination → CR (b path)	-.27	.15	-.56	.02	
Neg v Pos →Discrimination → CR (Indirect 1)	.02	.03	-.01	.09	
Neg v Pos → CR (Direct 1)	.04	.09	-.13	.22	
Neg v Pos → CR (Total 1)	.06	.08	-.10	.23	
Neu v Pos →Discrimination → CR (Indirect 2)	.01	.02	-.03	.07	
Neu v Pos → CR (Direct 2)	.05	.08	-.11	.21	
Neu v Pos → CR (Total 2)	.06	.08	-.09	.21	
Neg v Neu →Discrimination → CR (Indirect 3)	.01	.02	-.02	.08	
Neg v Neu → CR (Direct 3)	.00	.08	-.16	.15	
Neg v Neu → CR (Total 3)	.00	.08	-.16	.15	
Context Renewal Trial 1					
Discrimination → CR (b path)	-.28	.31	-.91	.35	
Neg v Pos →Discrimination → CR (Indirect 1)	.02	.03	-.01	.13	
Neg v Pos → CR (Direct 1)	.12	.18	-.25	.49	
Neg v Pos → CR (Total 1)	.13	.17	-.21	.48	
Neu v Pos →Discrimination → CR (Indirect 2)	.01	.03	-.03	.09	
Neu v Pos → CR (Direct 2)	.12	.17	-.23	.46	
Neu v Pos → CR (Total 2)	.12	.16	-.20	.44	
Neg v Neu →Discrimination → CR (Indirect 3)	.01	.03	-.02	.12	
Neg v Neu → CR (Direct 3)	.00	.17	-.34	34	
Neg v Neu → CR (Total 3)	-.01	.16	-.33	.31	
Context Renewal Trial 2					
Discrimination → CR (b path)	-.35	.18	-.71	.01	
Neg v Pos →Discrimination → CR (Indirect 1)	.03	.04	-.01	.15	
Neg v Pos → CR (Direct 1)	.04	.11	-.17	.25	

Neg v Pos → CR (Total 1)	.07	.10	-14	.27	
Neu v Pos →Discrimination → CR (Indirect 2)	.01	.03	-.04	.11	
Neu v Pos → CR (Direct 2)	-.06	.10	-.26	.13	
Neu v Pos → CR (Total 2)	-.04	.09	-.23	.15	
Neg v Neu →Discrimination → CR (Indirect 3)	.02	.04	-.02	.13	
Neg v Neu → CR (Direct 3)	.10	.10	-.09	.30	
Neg v Neu → CR (Total 3)	-.11	.09	-.29	.08	
Context Renewal Trial 3					
Discrimination → CR (b path)	-.18	.15	-.48	.12	
Neg v Pos →Discrimination → CR (Indirect 1)	.01	.02	-.01	.10	
Neg v Pos → CR (Direct 1)	.08	.09	-.10	.26	
Neg v Pos → CR (Total 1)	.09	.08	-.08	.26	
Neu v Pos →Discrimination → CR (Indirect 2)	.01	.02	-.02	.06	
Neu v Pos → CR (Direct 2)	.10	.08	-.06	.26	
Neu v Pos → CR (Total 2)	.12	.08	-.04	.27	
Neg v Neu →Discrimination → CR (Indirect 3)	.01	.02	-.01	.09	
Neg v Neu → CR (Direct 3)	-.10	.08	-.26	.06	
Neg v Neu → CR (Total 3)	.02	.08	-.13	.18	
Context Renewal Trial 4					
Discrimination → CR (b path)	.88	.58	-.28	2.03	
Neg v Pos →Discrimination → CR (Indirect 1)	-.07	.11	-.51	.05	
Neg v Pos → CR (Direct 1)	.15	.34	-.54	.83	
Neg v Pos → CR (Total 1)	.06	.32	-.58	.70	
Neu v Pos →Discrimination → CR (Indirect 2)	-.02	.10	-.40	.04	
Neu v Pos → CR (Direct 2)	.19	.31	-.44	.82	
Neu v Pos → CR (Total 2)	.14	.30	-.45	.73	
Neg v Neu →Discrimination → CR (Indirect 3)	-.05	.12	-.57	.05	
Neg v Neu → CR (Direct 3)	-.04	.31	-.67	.59	
Neg v Neu → CR (Total 3)	.08	.30	-.51	.67	
SCR during CS-					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	-.76	.23	-1.21	-.31	*
Neg v Pos →Discrimination → CR (Indirect 1)	.06	.06	-.02	.24	
Neg v Pos → CR (Direct 1)	-.21	.14	-.48	.06	
Neg v Pos → CR (Total 1)	-.14	.14	-.42	.15	
Neu v Pos →Discrimination → CR (Indirect 2)	.02	.06	-.10	.15	
Neu v Pos → CR (Direct 2)	-.16	.12	-.41	.09	
Neu v Pos → CR (Total 2)	-.13	.13	-.39	.13	
Neg v Neu →Discrimination → CR (Indirect 3)	.04	.07	-.05	.24	
Neg v Neu → CR (Direct 3)	-.05	.12	-.30	.20	
Neg v Neu → CR (Total 3)	.01	.13	-.25	.26	
All Context Renewal Trials					
Discrimination → CR (b path)	-1.14	.36	-1.86	-.42	*
Neg v Pos →Discrimination → CR (Indirect 1)	.09	.10	.00	.46	
Neg v Pos → CR (Direct 1)	-.34	.21	-.76	.09	
Neg v Pos → CR (Total 1)	-.23	.21	-.65	.20	

Neu v Pos → Discrimination → CR (Indirect 2)	.03	.10	-.11	.27	
Neu v Pos → CR (Direct 2)	-.23	.19	-.63	.16	
Neu v Pos → CR (Total 2)	-.19	.20	-.58	.21	
Neg v Neu → Discrimination → CR (Indirect 3)	.06	.11	-.04	.48	
Neg v Neu → CR (Direct 3)	-.10	.20	-.49	.29	
Neg v Neu → CR (Total 3)	.04	.20	-.36	.43	
Context Renewal Trial 1					
Discrimination → CR (b path)	-.81	.28	-1.38	-.24	*
Neg v Pos → Discrimination → CR (Indirect 1)	.06	.06	-.03	.23	
Neg v Pos → CR (Direct 1)	-.18	.17	-.51	.16	
Neg v Pos → CR (Total 1)	-.11	.17	-.44	.34	
Neu v Pos → Discrimination → CR (Indirect 2)	.02	.06	-.11	.14	
Neu v Pos → CR (Direct 2)	-.12	.15	-.43	.19	
Neu v Pos → CR (Total 2)	-.09	.16	-.41	.22	
Neg v Neu → Discrimination → CR (Indirect 3)	.04	.07	-.06	.24	
Neg v Neu → CR (Direct 3)	-.06	.15	-.40	.25	
Neg v Neu → CR (Total 3)	.01	.16	-.30	.32	
Context Renewal Trial 2					
Discrimination → CR (b path)	.54	.76	-.98	2.06	
Neg v Pos → Discrimination → CR (Indirect 1)	-.04	.14	-.64	.10	
Neg v Pos → CR (Direct 1)	.47	.45	-.42	1.37	
Neg v Pos → CR (Total 1)	.41	.41	-.42	1.23	
Neu v Pos → Discrimination → CR (Indirect 2)	-.02	.11	-.44	.10	
Neu v Pos → CR (Direct 2)	-.11	.41	-.93	.72	
Neu v Pos → CR (Total 2)	-.11	.38	-.87	.65	
Neg v Neu → Discrimination → CR (Indirect 3)	.03	.12	-.59	.08	
Neg v Neu → CR (Direct 3)	.58	.41	-.25	1.41	
Neg v Neu → CR (Total 3)	-.52	.38	-1.28	.25	
Context Renewal Trial 3					
Discrimination → CR (b path)	-.31	.16	-.62	.01	
Neg v Pos → Discrimination → CR (Indirect 1)	.02	.03	-.01	.12	
Neg v Pos → CR (Direct 1)	-.04	.09	-.22	.15	
Neg v Pos → CR (Total 1)	.00	.09	-.18	.18	
Neu v Pos → Discrimination → CR (Indirect 2)	.01	.03	-.03	.08	
Neu v Pos → CR (Direct 2)	.07	.09	-.10	.24	
Neu v Pos → CR (Total 2)	.07	.08	-.09	.24	
Neg v Neu → Discrimination → CR (Indirect 3)	-.01	.03	-.08	.03	
Neg v Neu → CR (Direct 3)	-.07	.09	-.24	.10	
Neg v Neu → CR (Total 3)	.07	.08	-.09	.24	
Context Renewal Trial 4					
Discrimination → CR (b path)	-.25	.23	-.71	.21	
Neg v Pos → Discrimination → CR (Indirect 1)	.03	.03	-.01	.13	
Neg v Pos → CR (Direct 1)	.07	.13	-.20	.33	
Neg v Pos → CR (Total 1)	.09	.12	-.15	.33	
Neu v Pos → Discrimination → CR (Indirect 2)	.02	.02	-.01	.10	
Neu v Pos → CR (Direct 2)	.13	.12	-.11	.37	
Neu v Pos → CR (Total 2)	.16	.11	-.06	.38	

Neg v Neu → Discrimination → CR (Indirect 3)	.01	.03	-.02	.11	
Neg v Neu → CR (Direct 3)	-.07	.12	-.30	.17	
Neg v Neu → CR (Total 3)	.07	.11	-.15	.29	

Table 3. Group and Spontaneous Recovery

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.11	.08	-.27	.06	
Neu vs Pos → Discrimination (a2 path)	-.03	.07	-.18	.12	
Neg vs Neu → Discrimination (a3 path)	-.08	.08	-.23	.07	
SCR during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.60	.16	-.92	-.29	*
Neg v Pos → Discrimination → SR (Indirect 1)	.06	.04	-.02	.16	
Neg v Pos → SR (Direct 1)	-.04	.09	-.22	.15	
Neg v Pos → SR (Total 1)	.02	.10	-.18	.21	
Neu v Pos → Discrimination → SR (Indirect 2)	.02	.05	-.08	.10	
Neu v Pos → SR (Direct 2)	-.03	.08	-.19	.14	
Neu v Pos → SR (Total 2)	-.02	.09	-.19	.16	
Neg v Neu → Discrimination → SR (Indirect 3)	.05	.05	-.03	.17	
Neg v Neu → SR (Direct 3)	-.01	.09	-.18	.16	
Neg v Neu → SR (Total 3)	-.03	.09	-.22	.15	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.37	.45	-2.27	-.47	*
Neg v Pos → Discrimination → SR (Indirect 1)	.14	.13	.02	.64	*
Neg v Pos → SR (Direct 1)	-.42	.26	-.95	.11	
Neg v Pos → SR (Total 1)	-.26	.26	-.79	.26	
Neu v Pos → Discrimination → SR (Indirect 2)	.04	.12	-.09	.39	
Neu v Pos → SR (Direct 2)	-.36	.24	-.84	.12	
Neu v Pos → SR (Total 2)	-.30	.24	-.77	.18	
Neg v Neu → Discrimination → SR (Indirect 3)	.11	.15	-.01	.71	
Neg v Neu → SR (Direct 3)	-.06	.24	-.55	.43	
Neg v Neu → SR (Total 3)	-.03	.24	-.52	.45	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-1.56	.41	-2.38	-.74	*
Neg v Pos → Discrimination → SR (Indirect 1)	.16	.13	.02	.61	*
Neg v Pos → SR (Direct 1)	-.40	.24	-.88	.08	
Neg v Pos → SR (Total 1)	-.23	.25	-.73	.27	
Neu v Pos → Discrimination → SR (Indirect 2)	.04	.13	-.19	.32	
Neu v Pos → SR (Direct 2)	-.28	.21	-.71	.16	
Neu v Pos → SR (Total 2)	-.24	.23	-.69	.22	
Neg v Neu → Discrimination → SR (Indirect 3)	.12	.15	-.03	.64	
Neg v Neu → SR (Direct 3)	-.12	.22	-.57	.32	
Neg v Neu → SR (Total 3)	-.01	.23	-.47	.46	
Spontaneous Recovery Trial 2					

Discrimination → SR (b path)	-.58	.24	-1.06	-.10	*
Neg v Pos →Discrimination → SR (Indirect 1)	.06	.05	.003	.21	*
Neg v Pos → SR (Direct 1)	-.07	.14	-.35	.21	
Neg v Pos → SR (Total 1)	.00	.14	-.28	.27	
Neu v Pos →Discrimination → SR (Indirect 2)	.02	.05	-.07	.11	
Neu v Pos → SR (Direct 2)	-.09	.13	-.35	.16	
Neu v Pos → SR (Total 2)	-.07	.12	-.31	.18	
Neg v Neu →Discrimination → SR (Indirect 3)	.05	.06	-.02	.23	
Neg v Neu → SR (Direct 3)	.03	.13	-.23	.29	
Neg v Neu → SR (Total 3)	-.06	.13	-.31	.19	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	.23	.17	-.12	.58	
Neg v Pos →Discrimination → SR (Indirect 1)	-.02	.03	-.14	.01	
Neg v Pos → SR (Direct 1)	.12	.10	-.09	.32	
Neg v Pos → SR (Total 1)	.09	.10	-.10	.28	
Neu v Pos →Discrimination → SR (Indirect 2)	-.01	.03	-.09	.02	
Neu v Pos → SR (Direct 2)	.06	.09	-.13	.24	
Neu v Pos → SR (Total 2)	.08	.09	-.10	.25	
Neg v Neu →Discrimination → SR (Indirect 3)	.01	.03	-.02	.09	
Neg v Neu → SR (Direct 3)	-.06	.09	-.24	.13	
Neg v Neu → SR (Total 3)	-.01	.09	-.19	.17	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.51	.49	-1.50	.48	
Neg v Pos →Discrimination → SR (Indirect 1)	.05	.05	.00	.21	
Neg v Pos → SR (Direct 1)	.27	.29	-.31	.85	
Neg v Pos → SR (Total 1)	.32	.27	-.22	.85	
Neu v Pos →Discrimination → SR (Indirect 2)	.01	.04	-.06	.11	
Neu v Pos → SR (Direct 2)	.25	.26	-.27	.77	
Neu v Pos → SR (Total 2)	.26	.24	-.22	.75	
Neg v Neu →Discrimination → SR (Indirect 3)	.04	.05	-.01	.24	
Neg v Neu → SR (Direct 3)	.02	.27	-.51	.56	
Neg v Neu → SR (Total 3)	-.05	.25	-.55	.44	
SCR during CS-					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.27	.51	-1.30	.76	
Neg v Pos →Discrimination → SR (Indirect 1)	.04	.03	.00	.14	
Neg v Pos → SR (Direct 1)	.37	.30	-.23	.96	
Neg v Pos → SR (Total 1)	.37	.27	-.16	.90	
Neu v Pos →Discrimination → SR (Indirect 2)	.02	.02	-.01	.09	
Neu v Pos → SR (Direct 2)	.36	.27	-.18	.89	
Neu v Pos → SR (Total 2)	.35	.24	-.14	.84	
Neg v Neu →Discrimination → SR (Indirect 3)	-.02	.02	-.09	.01	
Neg v Neu → SR (Direct 3)	-.36	.27	-.89	.18	
Neg v Neu → SR (Total 3)	-.02	.24	-.50	.46	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.34	.13	-.61	-.08	*

Neg v Pos → Discrimination → SR (Indirect 1)	.04	.03	.00	.13	
Neg v Pos → SR (Direct 1)	-.02	.08	-.17	.14	
Neg v Pos → SR (Total 1)	.02	.08	-.14	.17	
Neu v Pos → Discrimination → SR (Indirect 2)	.01	.03	-.04	.07	
Neu v Pos → SR (Direct 2)	-.03	.07	-.17	.11	
Neu v Pos → SR (Total 2)	-.02	.07	-.16	.12	
Neg v Neu → Discrimination → SR (Indirect 3)	.03	.03	-.01	.13	
Neg v Neu → SR (Direct 3)	.01	.07	-.13	.16	
Neg v Neu → SR (Total 3)	-.03	.07	-.17	.11	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.42	.18	-.78	-.07	*
Neg v Pos → Discrimination → SR (Indirect 1)	.04	.04	.00	.15	
Neg v Pos → SR (Direct 1)	-.08	.10	-.29	.13	
Neg v Pos → SR (Total 1)	-.04	.10	-.24	17	
Neu v Pos → Discrimination → SR (Indirect 2)	.01	.03	-.05	.09	
Neu v Pos → SR (Direct 2)	-.04	.09	-.23	.15	
Neu v Pos → SR (Total 2)	-.01	.09	-.20	.17	
Neg v Neu → Discrimination → SR (Indirect 3)	.03	.04	-.02	.16	
Neg v Neu → SR (Direct 3)	-.04	.10	-.23	.16	
Neg v Neu → SR (Total 3)	.03	.09	-.16	.21	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-1.39	.56	-2.52	-.25	*
Neg v Pos → Discrimination → SR (Indirect 1)	.15	.15	.00	.73	
Neg v Pos → SR (Direct 1)	-.64	.33	-1.30	.03	
Neg v Pos → SR (Total 1)	-.47	.32	-1.11	.17	
Neu v Pos → Discrimination → SR (Indirect 2)	.04	.13	-.05	.51	
Neu v Pos → SR (Direct 2)	-.59	.30	-1.19	.01	
Neu v Pos → SR (Total 2)	-.53	.29	-1.12	.05	
Neg v Neu → Discrimination → SR (Indirect 3)	.11	.16	-.02	.77	
Neg v Neu → SR (Direct 3)	-.05	.31	-.67	.57	
Neg v Neu → SR (Total 3)	-.06	.30	-.66	.53	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.39	.20	-.80	.02	
Neg v Pos → Discrimination → SR (Indirect 1)	.04	.04	-.01	.20	
Neg v Pos → SR (Direct 1)	-.06	.12	-.31	.18	
Neg v Pos → SR (Total 1)	-.01	.12	-.24	.22	
Neu v Pos → Discrimination → SR (Indirect 2)	.01	.04	-.02	.14	
Neu v Pos → SR (Direct 2)	-.10	.11	-.32	.12	
Neu v Pos → SR (Total 2)	-.08	.11	-.29	.13	
Neg v Neu → Discrimination → SR (Indirect 3)	.03	.05	-.01	.23	
Neg v Neu → SR (Direct 3)	.04	.11	-.18	.26	
Neg v Neu → SR (Total 3)	-.07	.11	-.28	.14	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.93	.68	-3.29	-.56	*
Neg v Pos → Discrimination → SR (Indirect 1)	.20	.19	.01	.97	*
Neg v Pos → SR (Direct 1)	-.71	.40	-1.51	.09	
Neg v Pos → SR (Total 1)	-.47	.39	-1.26	.32	

Neu v Pos → Discrimination → SR (Indirect 2)	.05	.17	-.10	.62
Neu v Pos → SR (Direct 2)	-.59	.36	-1.31	.14
Neu v Pos → SR (Total 2)	-.50	.36	-1.21	.22
Neg v Neu → Discrimination → SR (Indirect 3)	.15	.21	-.02	1.00
Neg v Neu → SR (Direct 3)	-.12	.37	-.86	.62
Neg v Neu → SR (Total 3)	-.03	.36	-.75	.70

Table 4. Group and Extinction US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.01	.24	-.46	.48	
Neu vs Pos → Discrimination (a2 path)	.24	.23	-.22	.70	
Neg vs Neu → Discrimination (a3 path)	-.23	.24	-.71	.25	
Extinction US Expectancy during CS+					
Discrimination → Extinction (b path)	.22	.08	.06	.39	*
Neg v Pos → Discrimination → Extinction (Indirect 1)	.00	.02	-.02	.03	
Neg v Pos → Extinction (Direct 1)	.03	.18	-.38	.33	
Neg v Pos → Extinction (Total 1)	-.02	.19	-.40	.35	
Neu v Pos → Discrimination → Extinction (Indirect 2)	.05	.06	-.02	.23	
Neu v Pos → Extinction (Direct 2)	-.12	.18	-.47	.24	
Neu v Pos → Extinction (Total 2)	-.06	.18	-.43	.30	
Neg v Neu → Discrimination → Extinction (Indirect 3)	-.05	.06	-.23	.02	
Neg v Neu → Extinction (Direct 3)	.09	.18	-.28	.46	
Neg v Neu → Extinction (Total 3)	-.04	.19	-.42	.34	
Extinction US Expectancy during CS-					
Discrimination → Extinction (b path)	.24	.06	.13	.35	*
Neg v Pos → Discrimination → Extinction (Indirect 1)	.00	.01	-.02	.03	
Neg v Pos → Extinction (Direct 1)	.05	.012	-.19	.29	
Neg v Pos → Extinction (Total 1)	.05	.13	-.21	.32	
Neu v Pos → Discrimination → Extinction (Indirect 2)	.06	.07	-.01	.25	
Neu v Pos → Extinction (Direct 2)	.07	.12	-.16	.31	
Neu v Pos → Extinction (Total 2)	.13	.13	-.13	.39	
Neg v Neu → Discrimination → Extinction (Indirect 3)	-.06	.07	-.25	.01	
Neg v Neu → Extinction (Direct 3)	-.02	.12	-.27	.22	
Neg v Neu → Extinction (Total 3)	.08	.13	-.19	.35	

Table 5. Group and Context Renewal Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	-.03	.07	-.17	.12	
Neu vs Pos → Discrimination (a2 path)	-.07	.07	-.20	.06	
Neg vs Neu → Discrimination (a3 path)	.05	.07	-.09	.18	
US Expectancy during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	1.19	.72	-.24	2.63	

Neg v Pos → Discrimination → CR (Indirect 1)	-.03	.11	-.36	.11	
Neg v Pos → CR (Direct 1)	.20	.39	-.57	.98	
Neg v Pos → CR (Total 1)	.17	.39	-.61	.96	
Neu v Pos → Discrimination → CR (Indirect 2)	-.08	.10	-.41	.05	
Neu v Pos → CR (Direct 2)	-.08	.36	-.81	.65	
Neu v Pos → CR (Total 2)	-.16	.37	-.90	.57	
Neg v Neu → Discrimination → CR (Indirect 3)	.05	.10	-.08	.33	
Neg v Neu → CR (Direct 3)	.28	.37	-.45	1.02	
Neg v Neu → CR (Total 3)	-.34	.37	-1.08	.41	
All Context Renewal Trials					
Discrimination → CR (b path)	.46	.64	-.83	1.74	
Neg v Pos → Discrimination → CR (Indirect 1)	-.01	.06	-.25	.06	
Neg v Pos → CR (Direct 1)	.12	.34	-.57	.81	
Neg v Pos → CR (Total 1)	.11	.34	-.58	.80	
Neu v Pos → Discrimination → CR (Indirect 2)	.03	.07	-.27	.06	
Neu v Pos → CR (Direct 2)	-.07	.32	-.72	.58	
Neu v Pos → CR (Total 2)	-.10	.32	-.74	.54	
Neg v Neu → Discrimination → CR (Indirect 3)	.02	.07	-.05	.25	
Neg v Neu → CR (Direct 3)	.19	.33	-.46	.85	
Neg v Neu → CR (Total 3)	-.21	.33	-.86	.44	
Context Renewal Trial 1					
Discrimination → CR (b path)	1.92	.71	.51	3.34	*
Neg v Pos → Discrimination → CR (Indirect 1)	-.05	.13	-.35	.20	
Neg v Pos → CR (Direct 1)	.47	.38	-.30	1.23	
Neg v Pos → CR (Total 1)	.42	.40	-.38	1.22	
Neu v Pos → Discrimination → CR (Indirect 2)	-.14	.13	-.40	.11	
Neu v Pos → CR (Direct 2)	.00	.36	-.71	.72	
Neu v Pos → CR (Total 2)	-.13	.37	-.88	.62	
Neg v Neu → Discrimination → CR (Indirect 3)	.09	.13	-.18	.36	
Neg v Neu → CR (Direct 3)	.46	.36	-.26	1.19	
Neg v Neu → CR (Total 3)	-.55	.38	-1.31	.21	
Context Renewal Trial 2					
Discrimination → CR (b path)	.46	.93	-1.39	2.32	
Neg v Pos → Discrimination → CR (Indirect 1)	-.01	.10	-.34	.11	
Neg v Pos → CR (Direct 1)	-.06	.50	-1.06	.94	
Neg v Pos → CR (Total 1)	-.07	.50	-1.06	.92	
Neu v Pos → Discrimination → CR (Indirect 2)	-.03	.12	-.40	.12	
Neu v Pos → CR (Direct 2)	-.16	.47	-1.10	.78	
Neu v Pos → CR (Total 2)	-.20	.46	-1.12	.73	
Neg v Neu → Discrimination → CR (Indirect 3)	.02	.10	-.09	.37	
Neg v Neu → CR (Direct 3)	.10	.47	-.84	1.05	
Neg v Neu → CR (Total 3)	-.13	.47	-1.07	.81	
Context Renewal Trial 3					
Discrimination → CR (b path)	.48	.74	-1.00	1.96	
Neg v Pos → Discrimination → CR (Indirect 1)	-.01	.05	-.19	.05	
Neg v Pos → CR (Direct 1)	.17	.40	-.63	.97	

Neg v Pos → CR (Total 1)	.16	.40	-.63	.95
Neu v Pos →Discrimination → CR (Indirect 2)	-.03	.07	-.25	.04
Neu v Pos → CR (Direct 2)	-.02	.38	-.77	.73
Neu v Pos → CR (Total 2)	-.06	.37	-.80	.69
Neg v Neu →Discrimination → CR (Indirect 3)	.02	.06	-.04	.21
Neg v Neu → CR (Direct 3)	.19	.38	-.56	.95
Neg v Neu → CR (Total 3)	-.22	.38	-.97	.54
Context Renewal Trial 4				
Discrimination → CR (b path)	-1.04	.65	-2.34	.26
Neg v Pos →Discrimination → CR (Indirect 1)	.03	.09	-.07	.35
Neg v Pos → CR (Direct 1)	-.09	.35	-.79	.61
Neg v Pos → CR (Total 1)	.07	.35	-.77	.64
Neu v Pos →Discrimination → CR (Indirect 2)	.07	.14	-.05	.56
Neu v Pos → CR (Direct 2)	-.10	.33	-.76	.56
Neu v Pos → CR (Total 2)	-.03	.33	-.69	.63
Neg v Neu →Discrimination → CR (Indirect 3)	.05	.12	-.50	.05
Neg v Neu → CR (Direct 3)	.01	.33	-.66	.67
Neg v Neu → CR (Total 3)	.04	.34	-.63	.71
US Expectancy during CS-				
First 2 Context Renewal Trials				
Discrimination → CR (b path)	.03	.59	-1.14	1.21
Neg v Pos →Discrimination → CR (Indirect 1)	.00	.04	-.09	.06
Neg v Pos → CR (Direct 1)	.35	.32	-.28	.99
Neg v Pos → CR (Total 1)	.35	.31	-.28	.98
Neu v Pos →Discrimination → CR (Indirect 2)	.00	.05	-.12	.09
Neu v Pos → CR (Direct 2)	.47	.30	-.12	1.07
Neu v Pos → CR (Total 2)	.47	.29	-.12	1.06
Neg v Neu →Discrimination → CR (Indirect 3)	.00	.04	-.07	.11
Neg v Neu → CR (Direct 3)	-.12	.30	-.73	.48
Neg v Neu → CR (Total 3)	.12	.30	-.47	.72
All Context Renewal Trials				
Discrimination → CR (b path)	-.50	.46	-1.42	.43
Neg v Pos →Discrimination → CR (Indirect 1)	.01	.04	-.04	.16
Neg v Pos → CR (Direct 1)	.12	.25	-.38	.62
Neg v Pos → CR (Total 1)	.13	.25	-.37	.63
Neu v Pos →Discrimination → CR (Indirect 2)	.04	.06	-.02	.26
Neu v Pos → CR (Direct 2)	.31	.23	-.16	.78
Neu v Pos → CR (Total 2)	.34	.23	-.12	.81
Neg v Neu →Discrimination → CR (Indirect 3)	-.02	.06	-.22	.03
Neg v Neu → CR (Direct 3)	-.19	.24	-.66	.29
Neg v Neu → CR (Total 3)	.21	.24	-.26	.68
Context Renewal Trial 1				
Discrimination → CR (b path)	.37	.74	-1.12	1.85
Neg v Pos →Discrimination → CR (Indirect 1)	-.01	.05	-.21	.04
Neg v Pos → CR (Direct 1)	.72	.38	-.03	1.48
Neg v Pos → CR (Total 1)	.78	.40	-.01	1.58

Neu v Pos → Discrimination → CR (Indirect 2)	-.03	.06	-.24	.05	
Neu v Pos → CR (Direct 2)	.72	.38	-.03	1.48	
Neu v Pos → CR (Total 2)	.70	.37	-.04	1.44	
Neg v Neu → Discrimination → CR (Indirect 3)	.02	.06	-.05	.24	
Neg v Neu → CR (Direct 3)	.07	.38	-.69	.83	
Neg v Neu → CR (Total 3)	-.09	.38	-.84	.67	
Context Renewal Trial 2					
Discrimination → CR (b path)	-.30	.63	-1.56	.96	
Neg v Pos → Discrimination → CR (Indirect 1)	-.09	.34	-.77	.59	
Neg v Pos → CR (Direct 1)	.01	.05	-.05	.19	
Neg v Pos → CR (Total 1)	.78	.40	-.01	1.58	
Neu v Pos → Discrimination → CR (Indirect 2)	.02	.06	-.05	.25	
Neu v Pos → CR (Direct 2)	.23	.32	-.41	.86	
Neu v Pos → CR (Total 2)	.70	.37	-.04	1.44	
Neg v Neu → Discrimination → CR (Indirect 3)	-.01	.05	-.21	.04	
Neg v Neu → CR (Direct 3)	-.31	.32	-.96	.33	
Neg v Neu → CR (Total 3)	-.09	.38	-.84	.67	
Context Renewal Trial 3					
Discrimination → CR (b path)	-.77	.46	-1.69	.16	
Neg v Pos → Discrimination → CR (Indirect 1)	.02	.06	-.06	.19	
Neg v Pos → CR (Direct 1)	-.10	.25	-.60	.40	
Neg v Pos → CR (Total 1)	-.08	.34	-.75	.59	
Neu v Pos → Discrimination → CR (Indirect 2)	.05	.08	-.02	.31	
Neu v Pos → CR (Direct 2)	.18	.23	-.29	.65	
Neu v Pos → CR (Total 2)	.25	.31	-.38	.87	
Neg v Neu → Discrimination → CR (Indirect 3)	-.03	.07	-.28	.03	
Neg v Neu → CR (Direct 3)	-.28	.24	-.75	.19	
Neg v Neu → CR (Total 3)	.33	.32	-..31	.96	
Context Renewal Trial 4					
Discrimination → CR (b path)	-1.28	.52	-2.31	-.25	*
Neg v Pos → Discrimination → CR (Indirect 1)	.03	.10	-.07	.38	
Neg v Pos → CR (Direct 1)	-.12	.28	-.68	.43	
Neg v Pos → CR (Total 1)	-.09	.29	-.67	.49	
Neu v Pos → Discrimination → CR (Indirect 2)	.09	.15	-.03	.61	
Neu v Pos → CR (Direct 2)	.10	.26	-.42	.63	
Neu v Pos → CR (Total 2)	.20	.27	-.35	.74	
Neg v Neu → Discrimination → CR (Indirect 3)	-.06	.13	-.54	.04	
Neg v Neu → CR (Direct 3)	-.23	.26	-.76	.30	
Neg v Neu → CR (Total 3)	.29	.27	-.26	.84	

Table 6. Group and Spontaneous Recovery US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	-.03	.07	-.17	.12	
Neu vs Pos → Discrimination (a2 path)	-.07	.07	-.20	.06	
Neg vs Neu → Discrimination (a3 path)	.04	.07	-.09	.18	

US Expectancy during CS+

First 2 Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.48	.76	-2.00	1.03
Neg v Pos → Discrimination → SR (Indirect 1)	.01	.08	-.07	.32
Neg v Pos → SR (Direct 1)	-.34	.41	-1.17	.49
Neg v Pos → SR (Total 1)	-.32	.41	-1.15	.50
Neu v Pos → Discrimination → SR (Indirect 2)	.03	.09	-.07	.39
Neu v Pos → SR (Direct 2)	-.33	.38	-1.10	.44
Neu v Pos → SR (Total 2)	-.29	.38	-1.05	.46
Neg v Neu → Discrimination → SR (Indirect 3)	-.02	.08	-.38	.06
Neg v Neu → SR (Direct 3)	-.01	.39	-.80	.78
Neg v Neu → SR (Total 3)	.03	.39	-.75	.81
All Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.39	.57	-1.54	.76
Neg v Pos → Discrimination → SR (Indirect 1)	.01	.06	-.05	.23
Neg v Pos → SR (Direct 1)	-.18	.31	-.81	.45
Neg v Pos → SR (Total 1)	-.17	.31	-.79	.45
Neu v Pos → Discrimination → SR (Indirect 2)	.03	.07	-.05	.28
Neu v Pos → SR (Direct 2)	-.23	.29	-.91	.36
Neu v Pos → SR (Total 2)	-.20	.29	-.77	.38
Neg v Neu → Discrimination → SR (Indirect 3)	-.02	.06	-.28	.04
Neg v Neu → SR (Direct 3)	.05	.30	-.55	.64
Neg v Neu → SR (Total 3)	-.03	.30	-.62	.56
Spontaneous Recovery Trial 1				
Discrimination → SR (b path)	-.04	.30	-1.65	1.57
Neg v Pos → Discrimination → SR (Indirect 1)	.00	.08	-.14	.19
Neg v Pos → SR (Direct 1)	-.27	.44	-1.15	.61
Neg v Pos → SR (Total 1)	-.27	.44	-1.14	.61
Neu v Pos → Discrimination → SR (Indirect 2)	.00	.10	-.18	.26
Neu v Pos → SR (Direct 2)	-.18	.41	-1.00	.63
Neu v Pos → SR (Total 2)	-.18	.40	-.98	.62
Neg v Neu → Discrimination → SR (Indirect 3)	.00	.08	-.25	.14
Neg v Neu → SR (Direct 3)	-.08	.42	-.92	.75
Neg v Neu → SR (Total 3)	.08	.41	-.74	.91
Spontaneous Recovery Trial 2				
Discrimination → SR (b path)	-.93	.88	-2.69	.84
Neg v Pos → Discrimination → SR (Indirect 1)	.02	.10	-.08	.39
Neg v Pos → SR (Direct 1)	-.41	.48	-1.37	.55
Neg v Pos → SR (Total 1)	-.38	.48	-1.35	.58
Neu v Pos → Discrimination → SR (Indirect 2)	.07	.11	-.05	.48
Neu v Pos → SR (Direct 2)	-.47	.45	-1.36	.42
Neu v Pos → SR (Total 2)	-.41	.44	-1.29	.48
Neg v Neu → Discrimination → SR (Indirect 3)	-.04	.10	-.44	.06
Neg v Neu → SR (Direct 3)	.06	.46	-.85	.98
Neg v Neu → SR (Total 3)	-.02	.46	-.94	.89
Spontaneous Recovery Trial 3				
Discrimination → SR (b path)	-.44	.65	-1.74	.86

Neg v Pos → Discrimination → SR (Indirect 1)	.01	.06	-.05	.23	
Neg v Pos → SR (Direct 1)	.00	.35	-.71	.71	
Neg v Pos → SR (Total 1)	.01	.35	-.69	.72	
Neu v Pos → Discrimination → SR (Indirect 2)	.03	.07	-.04	.28	
Neu v Pos → SR (Direct 2)	-.15	.33	-.81	.50	
Neu v Pos → SR (Total 2)	-.12	.32	-.77	.53	
Neg v Neu → Discrimination → SR (Indirect 3)	-.02	.06	-.26	.04	
Neg v Neu → SR (Direct 3)	.15	.34	-.52	.83	
Neg v Neu → SR (Total 3)	-.13	.33	-.80	.53	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.14	.45	-1.04	.75	
Neg v Pos → Discrimination → SR (Indirect 1)	.00	.03	-.03	.13	
Neg v Pos → SR (Direct 1)	-.05	.24	-.54	.44	
Neg v Pos → SR (Total 1)	-.05	.24	-.53	.44	
Neu v Pos → Discrimination → SR (Indirect 2)	.01	.04	-.04	.16	
Neu v Pos → SR (Direct 2)	-.10	.23	-.55	.36	
Neu v Pos → SR (Total 2)	-.09	.22	-.53	.36	
Neg v Neu → Discrimination → SR (Indirect 3)	-.01	.04	-.15	.03	
Neg v Neu → SR (Direct 3)	.05	.23	-.42	.51	
Neg v Neu → SR (Total 3)	-.04	.23	-.50	.42	
<u>US Expectancy during CS-</u>					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.45	.58	-2.61	-.30	*
Neg v Pos → Discrimination → SR (Indirect 1)	.04	.11	-.15	.33	
Neg v Pos → SR (Direct 1)	-.01	.31	-.64	.62	
Neg v Pos → SR (Total 1)	.03	.33	-.63	.68	
Neu v Pos → Discrimination → SR (Indirect 2)	.10	.11	-.06	.40	
Neu v Pos → SR (Direct 2)	.20	.29	-.38	.79	
Neu v Pos → SR (Total 2)	.31	.30	-.30	.91	
Neg v Neu → Discrimination → SR (Indirect 3)	-.06	.11	-.35	.12	
Neg v Neu → SR (Direct 3)	-.22	.30	-.82	.38	
Neg v Neu → SR (Total 3)	.28	.31	-.34	.91	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.21	.39	-1.99	-.43	*
Neg v Pos → Discrimination → SR (Indirect 1)	.03	.09	-.13	.24	
Neg v Pos → SR (Direct 1)	.05	.21	-.38	.47	
Neg v Pos → SR (Total 1)	.08	.23	-.38	.54	
Neu v Pos → Discrimination → SR (Indirect 2)	.09	.09	-.06	.30	
Neu v Pos → SR (Direct 2)	.24	.20	-.16	.63	
Neu v Pos → SR (Total 2)	.32	.21	-.10	.74	
Neg v Neu → Discrimination → SR (Indirect 3)	-.05	.09	-.26	.11	
Neg v Neu → SR (Direct 3)	-.19	.20	-.59	.22	
Neg v Neu → SR (Total 3)	.24	.22	-.19	.68	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.68	.79	-2.27	.92	
Neg v Pos → Discrimination → SR (Indirect 1)	.02	.09	-.07	.38	

Neg v Pos → SR (Direct 1)	-.03	.43	-.90	.84	
Neg v Pos → SR (Total 1)	-.02	.43	-.88	.85	
Neu v Pos →Discrimination → SR (Indirect 2)	.05	.10	-.07	.44	
Neu v Pos → SR (Direct 2)	.10	.40	-.71	.90	
Neu v Pos → SR (Total 2)	.14	.40	-.65	.94	
Neg v Neu →Discrimination → SR (Indirect 3)	-.03	.09	-.42	.06	
Neg v Neu → SR (Direct 3)	-.13	.41	-.96	.70	
Neg v Neu → SR (Total 3)	.16	.41	-.66	.98	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-2.23	.52	-3.27	-1.19	*
Neg v Pos →Discrimination → SR (Indirect 1)	.06	.15	-.23	.39	
Neg v Pos → SR (Direct 1)	.01	.28	-.56	.58	
Neg v Pos → SR (Total 1)	.07	.32	-.58	.72	
Neu v Pos →Discrimination → SR (Indirect 2)	.16	.16	-.12	.49	
Neu v Pos → SR (Direct 2)	.31	.26	-.22	.84	
Neu v Pos → SR (Total 2)	.47	.30	-.13	1.07	
Neg v Neu →Discrimination → SR (Indirect 3)	-.10	.16	-.43	.20	
Neg v Neu → SR (Direct 3)	-.30	.27	-.84	.24	
Neg v Neu → SR (Total 3)	.40	.31	-.22	1.02	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.95	.42	-1.80	-.11	*
Neg v Pos →Discrimination → SR (Indirect 1)	.03	.08	-.09	.27	
Neg v Pos → SR (Direct 1)	.17	.23	-.29	.63	
Neg v Pos → SR (Total 1)	.20	.24	-.28	.67	
Neu v Pos →Discrimination → SR (Indirect 2)	.07	.08	-.03	.33	
Neu v Pos → SR (Direct 2)	.39	.21	-.04	.82	
Neu v Pos → SR (Total 2)	.46	.22	.02	.89	
Neg v Neu →Discrimination → SR (Indirect 3)	-.04	.08	-.27	.07	
Neg v Neu → SR (Direct 3)	-.22	.22	-.66	.22	
Neg v Neu → SR (Total 3)	.26	.23	-.19	.71	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.99	.35	-1.69	-.29	*
Neg v Pos →Discrimination → SR (Indirect 1)	.03	.07	-.08	.22	
Neg v Pos → SR (Direct 1)	.04	.19	-.34	.42	
Neg v Pos → SR (Total 1)	.07	.20	-.34	.47	
Neu v Pos →Discrimination → SR (Indirect 2)	.07	.09	-.03	.34	
Neu v Pos → SR (Direct 2)	.15	.18	-.21	.51	
Neu v Pos → SR (Total 2)	.22	.19	-.15	.59	
Neg v Neu →Discrimination → SR (Indirect 3)	-.04	.08	-.31	.05	
Neg v Neu → SR (Direct 3)	-.11	.18	-.47	.26	
Neg v Neu → SR (Total 3)	.15	.19	-.23	.54	

Table 7. Group and Extinction Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.00	.01	-.02	.01	

Neu vs Pos → Discrimination (a2 path)	.00	.01	-.01	.01	
Neg vs Neu → Discrimination (a3 path)	.00	.01	-.02	.01	
Extinction Heart Rate during CS+					
Discrimination → Extinction (b path)	.05	.70	-1.35	1.44	
Neg v Pos →Discrimination → Extinction (Indirect 1)	.00	.00	-.01	.02	
Neg v Pos → Extinction (Direct 1)	-.09	.04	-.16	-.02	*
Neg v Pos → Extinction (Total 1)	-.09	.04	-.16	-.02	
Neu v Pos →Discrimination → Extinction (Indirect 2)	.00	.00	-.01	.01	
Neu v Pos → Extinction (Direct 2)	-.07	.04	-.14	.00	
Neu v Pos → Extinction (Total 2)	-.07	.04	-.14	.00	
Neg v Neu →Discrimination → Extinction (Indirect 3)	.00	.00	-.01	.01	
Neg v Neu → Extinction (Direct 3)	-.02	.04	-.10	.05	
Neg v Neu → Extinction (Total 3)	.03	.04	-.05	.10	
Extinction Heart Rate during CS-					
Discrimination → Extinction (b path)	.21	.72	-1.23	1.65	
Neg v Pos →Discrimination → Extinction (Indirect 1)	.00	.01	-.02	.00	
Neg v Pos → Extinction (Direct 1)	-.06	.04	-.13	.01	
Neg v Pos → Extinction (Total 1)	-.06	.04	-.14	.01	
Neu v Pos →Discrimination → Extinction (Indirect 2)	.00	.01	-.01	.01	
Neu v Pos → Extinction (Direct 2)	-.04	.04	-.11	.04	
Neu v Pos → Extinction (Total 2)	-.04	.04	-.11	.04	
Neg v Neu →Discrimination → Extinction (Indirect 3)	.00	.00	-.01	.00	
Neg v Neu → Extinction (Direct 3)	-.02	.04	-.10	.05	
Neg v Neu → Extinction (Total 3)	.03	.04	-.05	.10	

Table 8. Group and Context Renewal Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	-.01	.01	-.02	.01	
Neu vs Pos → Discrimination (a2 path)	.00	.01	-.01	.01	
Neg vs Neu → Discrimination (a3 path)	.00	.01	-.02	.01	
Heart Rate during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	.78	1.43	-2.09	3.65	
Neg v Pos →Discrimination → CR (Indirect 1)	.00	.02	-.03	.02	
Neg v Pos → CR (Direct 1)	-.07	.07	-.20	.07	
Neg v Pos → CR (Total 1)	-.07	.07	-.20	.06	
Neu v Pos →Discrimination → CR (Indirect 2)	.00	.01	-.04	.01	
Neu v Pos → CR (Direct 2)	.02	.06	-.10	.15	
Neu v Pos → CR (Total 2)	.02	.06	-.10	.14	
Neg v Neu →Discrimination → CR (Indirect 3)	.00	.01	-.03	.02	
Neg v Neu → CR (Direct 3)	-.09	.06	-.21	.03	
Neg v Neu → CR (Total 3)	.09	.06	-.03	.22	
All Context Renewal Trials					
Discrimination → CR (b path)	.08	1.42	-2.77	2.93	

Neg v Pos → Discrimination → CR (Indirect 1)	.00	.02	-.02	.04
Neg v Pos → CR (Direct 1)	-.07	.07	-.20	.06
Neg v Pos → CR (Total 1)	-.07	.06	-.20	.06
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.01	-.03	.01
Neu v Pos → CR (Direct 2)	.01	.06	-.11	.13
Neu v Pos → CR (Total 2)	.01	.06	-.11	.13
Neg v Neu → Discrimination → CR (Indirect 3)	.00	.01	-.02	.03
Neg v Neu → CR (Direct 3)	-.08	.06	-.20	.04
Neg v Neu → CR (Total 3)	.08	.06	-.04	.20
Context Renewal Trial 1				
Discrimination → CR (b path)	-1.02	1.33	-3.67	1.64
Neg v Pos → Discrimination → CR (Indirect 1)	.01	.01	-.01	.05
Neg v Pos → CR (Direct 1)	-.06	.06	-.19	.06
Neg v Pos → CR (Total 1)	-.06	.06	-.18	.06
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.01	-.01	.05
Neu v Pos → CR (Direct 2)	.01	.06	-.10	.13
Neu v Pos → CR (Total 2)	.02	.06	-.10	.13
Neg v Neu → Discrimination → CR (Indirect 3)	.00	.01	-.01	.03
Neg v Neu → CR (Direct 3)	-.08	.06	-.19	.04
Neg v Neu → CR (Total 3)	.07	.06	-.04	.19
Context Renewal Trial 2				
Discrimination → CR (b path)	2.57	1.60	-.63	5.78
Neg v Pos → Discrimination → CR (Indirect 1)	-.02	.02	-.06	.02
Neg v Pos → CR (Direct 1)	-.07	.07	-.22	.08
Neg v Pos → CR (Total 1)	-.08	.07	-.23	.06
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.02	-.05	.02
Neu v Pos → CR (Direct 2)	.03	.07	-.10	.17
Neu v Pos → CR (Total 2)	.03	.07	-.11	.17
Neg v Neu → Discrimination → CR (Indirect 3)	-.01	.02	-.09	.02
Neg v Neu → CR (Direct 3)	-.10	.07	-.24	.03
Neg v Neu → CR (Total 3)	.12	.07	-.02	.25
Context Renewal Trial 3				
Discrimination → CR (b path)	-.16	1.50	-3.18	2.85
Neg v Pos → Discrimination → CR (Indirect 1)	.00	.01	-.01	.05
Neg v Pos → CR (Direct 1)	-.08	.07	-.22	.06
Neg v Pos → CR (Total 1)	-.08	.07	-.21	.06
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.01	-.02	.02
Neu v Pos → CR (Direct 2)	.01	.06	-.12	.14
Neu v Pos → CR (Total 2)	.01	.06	-.12	.14
Neg v Neu → Discrimination → CR (Indirect 3)	.00	.01	-.01	.04
Neg v Neu → CR (Direct 3)	-.09	.06	-.22	.04
Neg v Neu → CR (Total 3)	.09	.06	-.04	.21
Context Renewal Trial 4				
Discrimination → CR (b path)	-1.07	1.41	-3.90	1.75
Neg v Pos → Discrimination → CR (Indirect 1)	.01	.02	.00	.06
Neg v Pos → CR (Direct 1)	-.07	.06	-.20	.06

Neg v Pos → CR (Total 1)	-.07	.06	-.19	.06
Neu v Pos →Discrimination → CR (Indirect 2)	.00	.01	-.01	.05
Neu v Pos → CR (Direct 2)	-.02	.06	-.14	.10
Neu v Pos → CR (Total 2)	-.02	.06	-.13	.10
Neg v Neu →Discrimination → CR (Indirect 3)	.00	.01	-.01	.04
Neg v Neu → CR (Direct 3)	-.05	.06	-.18	.07
Neg v Neu → CR (Total 3)	.05	.06	-.07	.17
Heart Rate during CS-				
First 2 Context Renewal Trials				
Discrimination → CR (b path)	.22	1.04	-1.86	2.31
Neg v Pos →Discrimination → CR (Indirect 1)	.00	.01	-.02	.02
Neg v Pos → CR (Direct 1)	.01	.05	-.09	.10
Neg v Pos → CR (Total 1)	.00	.05	-.09	.10
Neu v Pos →Discrimination → CR (Indirect 2)	.00	.01	-.03	.01
Neu v Pos → CR (Direct 2)	.03	.04	-.05	.12
Neu v Pos → CR (Total 2)	.04	.04	-.05	.12
Neg v Neu →Discrimination → CR (Indirect 3)	.00	.01	-.02	.01
Neg v Neu → CR (Direct 3)	-.03	.04	-.12	.06
Neg v Neu → CR (Total 3)	.03	.04	-.06	.12
All Context Renewal Trials				
Discrimination → CR (b path)	-.08	1.09	-2.27	2.10
Neg v Pos →Discrimination → CR (Indirect 1)	.00	.01	-.01	.04
Neg v Pos → CR (Direct 1)	-.01	.05	-.11	.09
Neg v Pos → CR (Total 1)	-.01	.05	-.11	.09
Neu v Pos →Discrimination → CR (Indirect 2)	.00	.01	.02	.02
Neu v Pos → CR (Direct 2)	.02	.05	-.07	.11
Neu v Pos → CR (Total 2)	.02	.05	-.07	.11
Neg v Neu →Discrimination → CR (Indirect 3)	.00	.01	-.01	.03
Neg v Neu → CR (Direct 3)	-.03	.05	-.12	.06
Neg v Neu → CR (Total 3)	.03	.05	-.06	.12
Context Renewal Trial 1				
Discrimination → CR (b path)	.15	1.08	-2.01	2.32
Neg v Pos →Discrimination → CR (Indirect 1)	.00	.01	-.02	.02
Neg v Pos → CR (Direct 1)	.02	.05	-.08	.12
Neg v Pos → CR (Total 1)	.02	.05	-.08	.12
Neu v Pos →Discrimination → CR (Indirect 2)	.00	.01	-.03	.01
Neu v Pos → CR (Direct 2)	.06	.05	-.03	.15
Neu v Pos → CR (Total 2)	.06	.05	-.03	.15
Neg v Neu →Discrimination → CR (Indirect 3)	.00	.01	-.02	.02
Neg v Neu → CR (Direct 3)	-.04	.05	-.13	.06
Neg v Neu → CR (Total 3)	.04	.05	-.06	.13
Context Renewal Trial 2				
Discrimination → CR (b path)	.29	1.04	-1.79	2.37
Neg v Pos →Discrimination → CR (Indirect 1)	.00	.01	-.02	.02
Neg v Pos → CR (Direct 1)	-.01	.05	-.11	.09
Neg v Pos → CR (Total 1)	-.01	.05	-.11	.08

Neu v Pos → Discrimination → CR (Indirect 2)	.00	.01	-.03	.01
Neu v Pos → CR (Direct 2)	.01	.04	-.07	.10
Neu v Pos → CR (Total 2)	.01	.04	-.07	.10
Neg v Neu → Discrimination → CR (Indirect 3)	.00	.01	-.02	.01
Neg v Neu → CR (Direct 3)	-.02	.04	-.11	.07
Neg v Neu → CR (Total 3)	.02	.04	-.06	.11
Context Renewal Trial 3				
Discrimination → CR (b path)	-1.39	1.19	-3.78	.99
Neg v Pos → Discrimination → CR (Indirect 1)	.01	.01	.00	.06
Neg v Pos → CR (Direct 1)	-.05	.05	-.16	.06
Neg v Pos → CR (Total 1)	-.04	.05	-.15	.07
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.01	-.01	.05
Neu v Pos → CR (Direct 2)	-.04	.05	-.14	.06
Neu v Pos → CR (Total 2)	-.03	.05	-.13	.07
Neg v Neu → Discrimination → CR (Indirect 3)	.01	.01	-.01	.04
Neg v Neu → CR (Direct 3)	-.01	.05	-.12	.09
Neg v Neu → CR (Total 3)	.01	.05	-.10	.11
Context Renewal Trial 4				
Discrimination → CR (b path)	.63	1.29	-1.97	3.22
Neg v Pos → Discrimination → CR (Indirect 1)	.00	.02	-.03	.03
Neg v Pos → CR (Direct 1)	.00	.06	-.12	.12
Neg v Pos → CR (Total 1)	.00	.06	-.12	.12
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.01	-.05	.01
Neu v Pos → CR (Direct 2)	.05	.05	-.06	.16
Neu v Pos → CR (Total 2)	.05	.05	-.06	.16
Neg v Neu → Discrimination → CR (Indirect 3)	.00	.01	-.03	.02
Neg v Neu → CR (Direct 3)	-.05	.06	-.16	.07
Neg v Neu → CR (Total 3)	.05	.06	-.06	.16

Table 9. Group and Spontaneous Recovery Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.00	.01	-.02	.01	
Neu vs Pos → Discrimination (a2 path)	.00	.01	-.01	.01	
Neg vs Neu → Discrimination (a3 path)	.00	.01	-.01	.01	
Heart Rate during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.50	1.35	-3.22	2.22	
Neg v Pos → Discrimination → SR (Indirect 1)	.00	.01	-.01	.03	
Neg v Pos → SR (Direct 1)	-.08	.07	-.21	.05	
Neg v Pos → SR (Total 1)	-.08	.07	-.21	.05	
Neu v Pos → Discrimination → SR (Indirect 2)	.00	.01	-.01	.04	
Neu v Pos → SR (Direct 2)	-.01	.06	-.13	.11	
Neu v Pos → SR (Total 2)	-.01	.06	-.13	.11	
Neg v Neu → Discrimination → SR (Indirect 3)	.02	.09	-.01	.58	
Neg v Neu → SR (Direct 3)	-.07	.06	-.19	.06	

Neg v Neu → SR (Total 3)	.06	.06	-.06	.19
All Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.69	1.38	-3.45	2.08
Neg v Pos →Discrimination → SR (Indirect 1)	.00	.01	-.01	.04
Neg v Pos → SR (Direct 1)	-.07	.07	-.20	.06
Neg v Pos → SR (Total 1)	-.07	.07	-.20	.07
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.01	-.01	.04
Neu v Pos → SR (Direct 2)	-.02	.06	-.14	.10
Neu v Pos → SR (Total 2)	-.02	.06	-.14	.10
Neg v Neu →Discrimination → SR (Indirect 3)	.00	.01	-.01	.02
Neg v Neu → SR (Direct 3)	-.05	.06	-.17	.08
Neg v Neu → SR (Total 3)	.05	.06	-.08	.17
Spontaneous Recovery Trial 1				
Discrimination → SR (b path)	-.12	1.35	-2.83	2.58
Neg v Pos →Discrimination → SR (Indirect 1)	.00	.01	-.01	.02
Neg v Pos → SR (Direct 1)	-.07	.07	-.21	..06
Neg v Pos → SR (Total 1)	-.07	.07	-.20	.06
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.01	-.02	.02
Neu v Pos → SR (Direct 2)	-.01	.06	-.13	.11
Neu v Pos → SR (Total 2)	-.01	.06	-.13	.11
Neg v Neu →Discrimination → SR (Indirect 3)	.00	.01	-.01	.02
Neg v Neu → SR (Direct 3)	-.07	.06	-.19	.06
Neg v Neu → SR (Total 3)	.07	.06	-.05	.19
Spontaneous Recovery Trial 2				
Discrimination → SR (b path)	-.88	1.39	-3.66	1.91
Neg v Pos →Discrimination → SR (Indirect 1)	.00	.01	-.01	.04
Neg v Pos → SR (Direct 1)	-.08	.07	-.22	.05
Neg v Pos → SR (Total 1)	-.08	.07	-.22	.05
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.01	-.01	.05
Neu v Pos → SR (Direct 2)	-.02	.06	-.14	.10
Neu v Pos → SR (Total 2)	-.02	.06	-.14	.10
Neg v Neu →Discrimination → SR (Indirect 3)	.00	.01	-.02	.03
Neg v Neu → SR (Direct 3)	-.06	.06	-.19	.06
Neg v Neu → SR (Total 3)	.06	.06	-.06	.19
Spontaneous Recovery Trial 3				
Discrimination → SR (b path)	-.73	1.40	-3.54	2.07
Neg v Pos →Discrimination → SR (Indirect 1)	.00	.01	-.01	.04
Neg v Pos → SR (Direct 1)	-.06	.07	-.19	.08
Neg v Pos → SR (Total 1)	-.06	.07	-.19	.08
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.01	-.01	.05
Neu v Pos → SR (Direct 2)	-.03	.06	-.15	.09
Neu v Pos → SR (Total 2)	-.03	.06	-.15	.09
Neg v Neu →Discrimination → SR (Indirect 3)	.00	.01	-.05	.01
Neg v Neu → SR (Direct 3)	.03	.06	-.09	.15
Neg v Neu → SR (Total 3)	.03	.06	-.10	.15
Spontaneous Recovery Trial 4				

Discrimination → SR (b path)	-1.02	1.45	-3.92	1.89
Neg v Pos →Discrimination → SR (Indirect 1)	.00	.01	-.01	.05
Neg v Pos → SR (Direct 1)	-.06	.07	-.20	.08
Neg v Pos → SR (Total 1)	-.06	.07	-.19	.09
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.01	-.01	.05
Neu v Pos → SR (Direct 2)	-.02	.06	-.15	.11
Neu v Pos → SR (Total 2)	-.02	.06	-.14	.11
Neg v Neu →Discrimination → SR (Indirect 3)	.00	.01	-.05	.01
Neg v Neu → SR (Direct 3)	-.04	.07	-.17	.09
Neg v Neu → SR (Total 3)	.04	.07	-.09	.17
Heart Rate during CS-				
First 2 Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.75	1.00	-2.75	1.25
Neg v Pos →Discrimination → SR (Indirect 1)	.00	.01	-.01	.04
Neg v Pos → SR (Direct 1)	-.02	.05	-.11	.08
Neg v Pos → SR (Total 1)	-.01	.05	-.11	.08
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.01	-.01	.04
Neu v Pos → SR (Direct 2)	-.02	.04	-.11	.07
Neu v Pos → SR (Total 2)	-.02	.04	-.11	.07
Neg v Neu →Discrimination → SR (Indirect 3)	.00	.01	-.01	.02
Neg v Neu → SR (Direct 3)	.01	.05	-.08	.10
Neg v Neu → SR (Total 3)	-.01	.05	-.10	.08
All Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.48	1.01	-2.52	1.56
Neg v Pos →Discrimination → SR (Indirect 1)	.00	.01	-.01	.03
Neg v Pos → SR (Direct 1)	-.02	.05	-.12	.08
Neg v Pos → SR (Total 1)	-.02	.05	-.12	.08
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.01	-.01	.04
Neu v Pos → SR (Direct 2)	-.03	.05	-.12	.06
Neu v Pos → SR (Total 2)	-.03	.05	-.12	.06
Neg v Neu →Discrimination → SR (Indirect 3)	.00	.01	-.03	.01
Neg v Neu → SR (Direct 3)	.01	.05	-.08	.10
Neg v Neu → SR (Total 3)	-.01	.05	-.10	.08
Spontaneous Recovery Trial 1				
Discrimination → SR (b path)	-.76	.95	-2.67	1.14
Neg v Pos →Discrimination → SR (Indirect 1)	.00	.01	-.01	.03
Neg v Pos → SR (Direct 1)	-.01	.05	-.10	.08
Neg v Pos → SR (Total 1)	-.01	.05	-.10	.08
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.01	-.01	.04
Neu v Pos → SR (Direct 2)	-.01	.04	-.10	.07
Neu v Pos → SR (Total 2)	-.01	.04	-.09	.07
Neg v Neu →Discrimination → SR (Indirect 3)	.00	.01	-.01	.02
Neg v Neu → SR (Direct 3)	.00	.04	-.08	.09
Neg v Neu → SR (Total 3)	.00	.04	-.09	.08
Spontaneous Recovery Trial 2				
Discrimination → SR (b path)	-.74	1.07	-2.89	1.42

Neg v Pos → Discrimination → SR (Indirect 1)	.00	.01	-.01	.04
Neg v Pos → SR (Direct 1)	-.02	.05	-.13	.08
Neg v Pos → SR (Total 1)	-.02	.05	-.13	.08
Neu v Pos → Discrimination → SR (Indirect 2)	.00	.01	-.01	.05
Neu v Pos → SR (Direct 2)	-.04	.05	-.13	.06
Neu v Pos → SR (Total 2)	-.04	.05	-.13	.06
Neg v Neu → Discrimination → SR (Indirect 3)	.04	.05	-.06	.13
Neg v Neu → SR (Direct 3)	.00	.01	-.01	.03
Neg v Neu → SR (Total 3)	-.01	.05	-.11	.08
Spontaneous Recovery Trial 3				
Discrimination → SR (b path)	.22	1.21	-2.20	2.64
Neg v Pos → Discrimination → SR (Indirect 1)	.00	.01	-.04	.01
Neg v Pos → SR (Direct 1)	-.03	.06	-.15	.08
Neg v Pos → SR (Total 1)	-.03	.06	-.15	.08
Neu v Pos → Discrimination → SR (Indirect 2)	.00	.01	-.03	.01
Neu v Pos → SR (Direct 2)	-.03	.05	-.14	.08
Neu v Pos → SR (Total 2)	-.03	.05	-.14	.07
Neg v Neu → Discrimination → SR (Indirect 3)	.00	.01	-.02	.01
Neg v Neu → SR (Direct 3)	.00	.05	-.11	.11
Neg v Neu → SR (Total 3)	.00	.05	-.11	.11
Spontaneous Recovery Trial 4				
Discrimination → SR (b path)	-.64	1.00	-2.65	1.36
Neg v Pos → Discrimination → SR (Indirect 1)	.00	.01	-.01	.03
Neg v Pos → SR (Direct 1)	-.01	.05	-.11	.09
Neg v Pos → SR (Total 1)	-01	.05	-.11	.09
Neu v Pos → Discrimination → SR (Indirect 2)	.00	.01	-.01	.03
Neu v Pos → SR (Direct 2)	-.03	.04	-.12	.05
Neu v Pos → SR (Total 2)	-.03	.04	-.12	.06
Neg v Neu → Discrimination → SR (Indirect 3)	.00	.01	-.01	.02
Neg v Neu → SR (Direct 3)	.02	.05	-.07	.11
Neg v Neu → SR (Total 3)	-.02	.05	-.11	.07

Table 10. Group and Extinction Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.02	.04	-.06	.09	
Neu vs Pos → Discrimination (a2 path)	.01	.03	-.06	.09	
Neg vs Neu → Discrimination (a3 path)					
Extinction Fear Ratings for CS+					
Discrimination → Extinction (b path)	-1.92	1.20	-4.30	.46	
Neg v Pos → Discrimination → Extinction (Indirect 1)	-.03	.09	-.29	.09	
Neg v Pos → Extinction (Direct 1)	-.27	.43	-1.11	.58	
Neg v Pos → Extinction (Total 1)	-.30	.43	-1.15	.55	
Neu v Pos → Discrimination → Extinction (Indirect 2)	-.02	.09	-.26	.13	
Neu v Pos → Extinction (Direct 2)	-.21	.42	-1.06	.63	
Neu v Pos → Extinction (Total 2)	-.23	.43	-1.08	.62	

Neg v Neu → Discrimination → Extinction (Indirect 3)	-.01	.09	-.25	.13	
Neg v Neu → Extinction (Direct 3)	-.06	.44	-.92	.81	
Neg v Neu → Extinction (Total 3)	.07	.44	-.80	.94	
Extinction Fear Ratings for CS-					
Discrimination → Extinction (b path)	-5.34	.92	-7.18	-3.51	*
Neg v Pos → Discrimination → Extinction (Indirect 1)	-.10	.20	-.50	.28	
Neg v Pos → Extinction (Direct 1)	-.04	.33	-.69	.61	
Neg v Pos → Extinction (Total 1)	-.13	.38	-.90	.63	
Neu v Pos → Discrimination → Extinction (Indirect 2)	-.06	.23	-.48	.37	
Neu v Pos → Extinction (Direct 2)	-.04	.33	-.69	.61	
Neu v Pos → Extinction (Total 2)	-.10	.38	-.86	.66	
Neg v Neu → Discrimination → Extinction (Indirect 3)	-.04	.20	-.45	.35	
Neg v Neu → Extinction (Direct 3)	.00	.34	-.66	.67	
Neg v Neu → Extinction (Total 3)	.03	.39	-.75	.82	

Table 11. Group and Return of Fear Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.02	.04	-.07	.11	
Neu vs Pos → Discrimination (a2 path)	-.03	.04	-.11	.06	
Neg vs Neu → Discrimination (a3 path)	.05	.04	-.04	.14	
Fear Ratings for CS+					
Context Renewal					
Discrimination → CR (b path)	-.22	1.33	-2.89	2.44	
Neg v Pos → Discrimination → CR (Indirect 1)	-.01	.08	-.21	.11	
Neg v Pos → CR (Direct 1)	-.22	.48	-1.18	.74	
Neg v Pos → CR (Total 1)	-.23	.48	-1.18	.73	
Neu v Pos → Discrimination → CR (Indirect 2)	.01	.08	-.10	.25	
Neu v Pos → CR (Direct 2)	.06	.46	-.87	.98	
Neu v Pos → CR (Total 2)	.06	.46	-.85	.98	
Neg v Neu → Discrimination → CR (Indirect 3)	-.01	.10	-.30	.15	
Neg v Neu → CR (Direct 3)	-.28	.48	-1.24	.68	
Neg v Neu → CR (Total 3)	.29	.47	-.66	1.23	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.90	1.33	-4.56	.76	
Neg v Pos → Discrimination → SR (Indirect 1)	-.04	.11	-.44	.08	
Neg v Pos → SR (Direct 1)	-.76	.48	-1.72	.20	
Neg v Pos → SR (Total 1)	-.80	.49	-1.78	.17	
Neu v Pos → Discrimination → SR (Indirect 2)	.05	.11	-.08	.38	
Neu v Pos → SR (Direct 2)	-.07	.46	-.99	.85	
Neu v Pos → SR (Total 2)	-.02	.46	-.94	.91	
Neg v Neu → Discrimination → SR (Indirect 3)	-.10	.12	-.49	.04	
Neg v Neu → SR (Direct 3)	-.69	.48	-1.65	.27	
Neg v Neu → SR (Total 3)	.79	.48	-.17	1.75	
Fear Ratings for CS-					

Context Renewal					
Discrimination → CR (b path)	-2.50	1.13	-4.75	-.25	
Neg v Pos →Discrimination → CR (Indirect 1)	-.06	.12	-.39	.14	
Neg v Pos → CR (Direct 1)	.00	.41	-.82	.81	
Neg v Pos → CR (Total 1)	-.06	.42	-.89	.78	
Neu v Pos →Discrimination → CR (Indirect 2)	.07	.12	-.13	.39	
Neu v Pos → CR (Direct 2)	.15	.39	-.63	.92	
Neu v Pos → CR (Total 2)	.22	.40	-.58	1.01	
Neg v Neu →Discrimination → CR (Indirect 3)	-.13	.12	-.46	.04	
Neg v Neu → CR (Direct 3)	-.15	.41	-.96	.66	
Neg v Neu → CR (Total 3)	.28	.41	-.55	1.10	
Spontaneous Recovery					
Discrimination → SR (b path)	-4.05	.97	-5.99	-2.11	*
Neg v Pos →Discrimination → SR (Indirect 1)	-.09	.18	-.46	.26	
Neg v Pos → SR (Direct 1)	.03	.35	-.68	.73	
Neg v Pos → SR (Total 1)	-.07	.39	-.85	.72	
Neu v Pos →Discrimination → SR (Indirect 2)	.11	.18	-.25	.49	
Neu v Pos → SR (Direct 2)	.20	.34	-.47	.87	
Neu v Pos → SR (Total 2)	.31	.37	-.44	1.06	
Neg v Neu →Discrimination → SR (Indirect 3)	-.21	.17	-.56	.11	
Neg v Neu → SR (Direct 3)	-.17	.35	-.87	.53	
Neg v Neu → SR (Total 3)	.38	.39	-.40	1.15	

Table 12. Group and Extinction Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	-.01	.04	-.08	.06	
Neu vs Pos → Discrimination (a2 path)	-.03	.04	-.10	.05	
Neg vs Neu → Discrimination (a3 path)	.02	.04	-.06	.09	
Extinction Valence Ratings for CS+					
Discrimination → Extinction (b path)	.45	.70	-.94	1.84	
Neg v Pos →Discrimination → Extinction (Indirect 1)	.00	.03	-.10	.04	
Neg v Pos → Extinction (Direct 1)	.11	.23	-.36	.57	
Neg v Pos → Extinction (Total 1)	.10	.23	-.36	.56	
Neu v Pos →Discrimination → Extinction (Indirect 2)	-.01	.04	-.16	.03	
Neu v Pos → Extinction (Direct 2)	.15	.23	-.32	.61	
Neu v Pos → Extinction (Total 2)	.14	.23	-.32	.60	
Neg v Neu →Discrimination → Extinction (Indirect 3)	.01	.03	-.03	.12	
Neg v Neu → Extinction (Direct 3)	-.04	.24	-.52	.43	
Neg v Neu → Extinction (Total 3)	.03	.24	-.44	.51	
Extinction Valence Ratings for CS-					
Discrimination → Extinction (b path)	-1.72	.64	-2.99	-.45	*

Neg v Pos → Discrimination → Extinction (Indirect 1)	.01	.07	-.10	.18
Neg v Pos → Extinction (Direct 1)	.03	.21	-.40	.45
Neg v Pos → Extinction (Total 1)	.04	.22	-.40	.48
Neu v Pos → Discrimination → Extinction (Indirect 2)	.04	.07	-.07	.23
Neu v Pos → Extinction (Direct 2)	-.04	.21	-.46	.39
Neu v Pos → Extinction (Total 2)	.01	.22	-.43	45
Neg v Neu → Discrimination → Extinction (Indirect 3)	.03	.06	-.19	.08
Neg v Neu → Extinction (Direct 3)	.06	.22	-.37	.50
Neg v Neu → Extinction (Total 3)	-.03	.23	-.48	.42

Table 13. Group and Return of Fear Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	-.02	.04	-.10	.07	
Neu vs Pos → Discrimination (a2 path)	.00	.04	-.07	.08	
Neg vs Neu → Discrimination (a3 path)	-.02	.04	-.10	.06	
Valence Ratings for CS+					
Context Renewal					
Discrimination → CR (b path)	1.34	.67	.01	2.68	*
Neg v Pos → Discrimination → CR (Indirect 1)	-.02	.06	-.18	.07	
Neg v Pos → CR (Direct 1)	-.16	.22	-.60	.28	
Neg v Pos → CR (Total 1)	-.18	.23	-.63	.27	
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.06	-.12	.13	
Neu v Pos → CR (Direct 2)	.01	.21	-.42	.43	
Neu v Pos → CR (Total 2)	.01	.22	-.42	.44	
Neg v Neu → Discrimination → CR (Indirect 3)	-.02	.06	-.18	.07	
Neg v Neu → CR (Direct 3)	-.16	.22	-.60	.27	
Neg v Neu → CR (Total 3)	.19	.22	-.26	.64	
Spontaneous Recovery					
Discrimination → SR (b path)	-.18	.74	-1.67	1.30	
Neg v Pos → Discrimination → SR (Indirect 1)	.00	.03	-.04	.12	
Neg v Pos → SR (Direct 1)	.27	.25	-.22	.76	
Neg v Pos → SR (Total 1)	.27	.24	-.21	.76	
Neu v Pos → Discrimination → SR (Indirect 2)	.00	.03	-.08	.06	
Neu v Pos → SR (Direct 2)	.22	.23	-.25	.69	
Neu v Pos → SR (Total 2)	.22	.23	-.25	.68	
Neg v Neu → Discrimination → SR (Indirect 3)	.00	.03	-.04	.11	
Neg v Neu → SR (Direct 3)	.05	.24	-.43	.54	
Neg v Neu → SR (Total 3)	-.06	.24	-.54	.42	
Valence Ratings for CS-					
Context Renewal					
Discrimination → CR (b path)	-.24	.58	-1.41	.93	
Neg v Pos → Discrimination → CR (Indirect 1)	.00	.03	-.03	.10	

Neg v Pos → CR (Direct 1)	.01	.19	-.38	.39	
Neg v Pos → CR (Total 1)	.01	.19	-.37	.39	
Neu v Pos →Discrimination → CR (Indirect 2)	.00	.18	-.37	.37	
Neu v Pos → CR (Direct 2)	.00	.03	-.07	.05	
Neu v Pos → CR (Total 2)	.00	.18	-.40	.36	
Neg v Neu →Discrimination → CR (Indirect 3)	.00	.03	-.03	.09	
Neg v Neu → CR (Direct 3)	.01	.19	-.37	.39	
Neg v Neu → CR (Total 3)	-.02	.19	-.39	.36	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.47	.59	-2.65	-.29	*
Neg v Pos →Discrimination → SR (Indirect 1)	.02	.07	-.09	.19	
Neg v Pos → SR (Direct 1)	-.19	.20	-.58	.20	
Neg v Pos → SR (Total 1)	-.17	.20	-.57	.24	
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.07	-.16	.12	
Neu v Pos → SR (Direct 2)	.00	.19	-.37	.37	
Neu v Pos → SR (Total 2)	-.01	.19	-.39	.38	
Neg v Neu →Discrimination → SR (Indirect 3)	.03	.06	-.07	.19	
Neg v Neu → SR (Direct 3)	-.19	.19	-.57	.20	
Neg v Neu → SR (Total 3)	.16	.20	-.24	.56	

Table 14. Group and Extinction Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.02	.03	-.05	.08	
Neu vs Pos → Discrimination (a2 path)	.03	.03	-.04	.10	
Neg vs Neu → Discrimination (a3 path)					
Extinction Arousal Ratings for CS+					
Discrimination → Extinction (b path)	-2.56	1.10	-4.75	-.37	*
Neg v Pos →Discrimination → Extinction (Indirect 1)	-.05	.10	-.29	.11	
Neg v Pos → Extinction (Direct 1)	-.58	.34	-1.26	.10	
Neg v Pos → Extinction (Total 1)	-.63	.35	-1.32	.07	
Neu v Pos →Discrimination → Extinction (Indirect 2)	-.08	.09	-.34	.06	
Neu v Pos → Extinction (Direct 2)	-.17	.34	-.85	.51	
Neu v Pos → Extinction (Total 2)	-.25	.35	-.94	.45	
Neg v Neu →Discrimination → Extinction (Indirect 3)	.03	.10	-.14	.28	
Neg v Neu → Extinction (Direct 3)	-.41	.35	-1.11	.29	
Neg v Neu → Extinction (Total 3)	.38	.36	-.33	1.09	
Extinction Arousal Ratings for CS-					
Discrimination → Extinction (b path)	-3.89	.98	-5.84	-1.94	*
Neg v Pos →Discrimination → Extinction (Indirect 1)	-.07	.14	-.36	19	
Neg v Pos → Extinction (Direct 1)	-.72	.30	-1.33	-.12	*
Neg v Pos → Extinction (Total 1)	-.80	.33	-1.45	-.14	*

Neu v Pos → Discrimination → Extinction (Indirect 2)	-.12	.13	-.43	.11
Neu v Pos → Extinction (Direct 2)	-.23	.31	-.84	.38
Neu v Pos → Extinction (Total 2)	-.35	.31	-1.00	.31
Neg v Neu → Discrimination → Extinction (Indirect 3)	.05	.14	-.21	.37
Neg v Neu → Extinction (Direct 3)	-.50	.31	-1.11	.12
Neg v Neu → Extinction (Total 3)	.45	.34	-.22	1.12

Table 15. Group and Return of Fear Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
Neg vs Pos → Discrimination (a1 path)	.01	.04	-.07	.09	
Neu vs Pos → Discrimination (a2 path)	.00	.04	-.08	.08	
Neg vs Neu → Discrimination (a3 path)					
Arousal Ratings for CS+					
Context Renewal					
Discrimination → CR (b path)	-.70	.97	-2.63	1.23	
Neg v Pos → Discrimination → CR (Indirect 1)	-.01	.05	-.19	.06	
Neg v Pos → CR (Direct 1)	-.23	.32	-.87	.41	
Neg v Pos → CR (Total 1)	-.24	.32	-.88	.40	
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.04	-.09	.09	
Neu v Pos → CR (Direct 2)	-.28	.31	-.89	.33	
Neu v Pos → CR (Total 2)	-.28	.31	-.89	.33	
Neg v Neu → Discrimination → CR (Indirect 3)	-.01	.05	-.19	.06	
Neg v Neu → CR (Direct 3)	.05	.32	-.59	.69	
Neg v Neu → CR (Total 3)	-.04	.32	-.68	.59	
Spontaneous Recovery					
Discrimination → SR (b path)	-.58	1.24	-3.06	1.90	
Neg v Pos → Discrimination → SR (Indirect 1)	-.01	.06	-.22	.08	
Neg v Pos → SR (Direct 1)	-.26	.41	-1.08	.57	
Neg v Pos → SR (Total 1)	-.26	.41	-1.08	.56	
Neu v Pos → Discrimination → SR (Indirect 2)	.00	.05	-.11	.11	
Neu v Pos → SR (Direct 2)	-.19	.39	-.98	.59	
Neu v Pos → SR (Total 2)	-.19	.39	-.98	.59	
Neg v Neu → Discrimination → SR (Indirect 3)	-.01	.06	-.22	.08	
Neg v Neu → SR (Direct 3)	-.06	.41	-.88	.75	
Neg v Neu → SR (Total 3)	.07	.41	-.74	.88	
Arousal Ratings for CS-					
Context Renewal					
Discrimination → CR (b path)	-1.41	1.04	-3.49	.67	
Neg v Pos → Discrimination → CR (Indirect 1)	-.02	.08	-.24	.10	
Neg v Pos → CR (Direct 1)	-.32	.35	-1.02	.37	
Neg v Pos → CR (Total 1)	-.34	.35	-1.04	.36	
Neu v Pos → Discrimination → CR (Indirect 2)	.00	.06	-.14	.12	

Neu v Pos → CR (Direct 2)	-.31	.33	-.97	.36
Neu v Pos → CR (Total 2)	-.31	.33	-.97	.36
Neg v Neu →Discrimination → CR (Indirect 3)	-.02	.08	-.23	.10
Neg v Neu → CR (Direct 3)	-.02	.34	-.70	.67
Neg v Neu → CR (Total 3)	.03	.35	-.66	.72
Spontaneous Recovery				
Discrimination → SR (b path)	-1.25	1.27	-3.78	1.28
Neg v Pos →Discrimination → SR (Indirect 1)	-.01	.08	-.29	.09
Neg v Pos → SR (Direct 1)	-.23	.42	-1.07	.61
Neg v Pos → SR (Total 1)	-.24	.42	-1.08	.60
Neu v Pos →Discrimination → SR (Indirect 2)	.00	.07	-.14	.15
Neu v Pos → SR (Direct 2)	-.01	.40	-.82	.79
Neu v Pos → SR (Total 2)	-.01	.40	-.82	.79
Neg v Neu →Discrimination → SR (Indirect 3)	-.01	.08	-.28	.09
Neg v Neu → SR (Direct 3)	-.22	.42	-1.05	.62
Neg v Neu → SR (Total 3)	.23	.42	-.60	1.07

Table 16. Positive Mood Change (PMC) and Extinction SCR

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction SCR during CS+					
Discrimination → Extinction (b path)	-.89	.56	-2.00	.21	
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	
PMC → Extinction (Direct Effect)	.00	.01	-.02	.02	
PMC → Extinction (Total Effect)	.00	.01	-.02	.02	
Extinction SCR during CS-					
Discrimination → Extinction (b path)	-.02	.13	-.29	.25	
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PMC → Extinction (Direct Effect)	.00	.00	-.01	.00	
PMC → Extinction (Total Effect)	.00	.00	-.01	.00	

Table 17. Positive Mood Change (PMC) and Context Renewal SCR

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.01	

SCR during CS+					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	-.31	.20	-.72	.09	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	-.01	.00	
PMC → SR (Total Effect)	.00	.00	-.01	.00	
All Context Renewal Trials					
Discrimination → SR (b path)	-.28	.14	-.57	.01	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 1					
Discrimination → SR (b path)	-.25	.31	-.87	.37	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	-.01	.01	-.02	.01	
PMC → SR (Total Effect)	-.01	.01	-.02	.00	
Context Renewal Trial 2					
Discrimination → SR (b path)	-.38	.18	-.74	-.02	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	-.01	.01	
Context Renewal Trial 3					
Discrimination → SR (b path)	-.22	.15	-.52	.08	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
Context Renewal Trial 4					
Discrimination → SR (b path)	.81	.57	-.23	1.96	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.02	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.01	.01	-.01	.03	
SCR during CS-					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	-.69	.23	-1.15	-.23	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.00	-.01	.00	
PMC → SR (Total Effect)	-.01	.00	-.01	.00	
All Context Renewal Trials					
Discrimination → SR (b path)	-1.02	.36	-1.75	-.29	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
PMC → SR (Direct Effect)	-.01	.01	-.02	.01	
PMC → SR (Total Effect)	-.01	.01	-.02	.01	
Context Renewal Trial 1					
Discrimination → SR (b path)	-.75	.28	-1.32	-.18	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.01	.00	
PMC → SR (Direct Effect)	.00	.00	-.01	.01	

PMC → SR (Total Effect)	.00	.01	-.01	.01
Context Renewal Trial 2				
Discrimination → SR (b path)	.38	.77	-1.16	1.92
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.02
PMC → SR (Direct Effect)	.00	.01	-.02	.03
PMC → SR (Total Effect)	.00	.01	-.02	.03
Context Renewal Trial 3				
Discrimination → SR (b path)	-.26	.16	-.57	.05
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	-.01	.00
PMC → SR (Total Effect)	.00	.00	-.01	.00
Context Renewal Trial 4				
Discrimination → SR (b path)	-.24	.22	-.68	.21
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	-.01	.00
PMC → SR (Total Effect)	-.01	.00	-.01	.00

Table 18. Positive Mood Change (PMC) and Spontaneous Recovery SCR

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.60	.15	-.91	-.29	*
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	-.01	.01	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.01	.01	-.02	.01	
PMC →Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.01	
PMC → SR (Total Effect)	-.01	.01	-.02	.01	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-1.42	.41	-2.25	-.59	*
PMC →Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.01	
PMC → SR (Total Effect)	-.01	.01	-.02	.01	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.58	.23	-1.05	-.11	*
PMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.00	-.01	.01	
PMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 3					

Discrimination → SR (b path)	.22	.17	-.13	.56	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	-.01	.00	
PMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.54	.49	-1.52	.44	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.01	
PMC → SR (Total Effect)	-.01	.01	-.02	.01	
SCR during CS-					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.42	.50	-1.44	.59	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.00	.01	-.02	.02	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.33	.13	-.59	-.07	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	-.01	.00	
PMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.37	.17	-.71	-.02	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	-.01	.00	
PMC → SR (Total Effect)	-.01	.00	-.01	.00	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-1.20	.58	-2.37	-.03	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	-.01	.01	-.03	.01	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.36	.20	-.76	.05	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.00	-.01	.00	
PMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.71	.69	-3.10	-.32	*
PMC → Discrimination → SR (Indirect Effect)	.00	.01	-.03	.00	
PMC → SR (Direct Effect)	.00	.01	-.03	.02	
PMC → SR (Total Effect)	-.01	.01	-.03	.02	

Table 19. Negative Mood Change (NMC) and Extinction SCR

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.01	
Extinction SCR during CS+					
Discrimination → Extinction (b path)	-.95	.56	-2.06	.16	
NMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00	
NMC → Extinction (Direct Effect)	.01	.01	-.01	.03	
NMC → Extinction (Total Effect)	.01	.01	-.01	.03	
Extinction SCR during CS-					
Discrimination → Extinction (b path)	-.05	.13	-.32	.22	
NMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
NMC → Extinction (Direct Effect)	.01	.00	.00	.01	
NMC → Extinction (Total Effect)	.01	.00	.00	.01	

Table 20. Negative Mood Change (NMC) and Context Renewal SCR

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	-.32	.20	-.73	.08	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.00	
All Context Renewal Trials					
Discrimination → SR (b path)	-.27	.14	-.56	.01	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.00	
NMC → SR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 1					
Discrimination → SR (b path)	-.29	.31	-.91	.33	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.01	-.02	.01	
NMC → SR (Total Effect)	.00	.01	-.02	.01	
Context Renewal Trial 2					
Discrimination → SR (b path)	-.36	.18	-.71	-.002	*
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 3					
Discrimination → SR (b path)	-.20	.15	-.50	.10	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	

NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.01	
Context Renewal Trial 4					
Discrimination → SR (b path)	.88	.57	-.26	2.02	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.02	
NMC → SR (Direct Effect)	-.01	.01	-.03	.02	
NMC → SR (Total Effect)	-.01	.01	-.03	.02	
SCR during CS-					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	-.70	.23	-1.16	-.25	*
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.01	
All Context Renewal Trials					
Discrimination → SR (b path)	-1.07	.36	-1.79	-.34	*
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.01	.01	
NMC → SR (Total Effect)	.00	.01	-.02	.01	
Context Renewal Trial 1					
Discrimination → SR (b path)	-.75	.28	-1.31	-.19	*
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.02	.01	
NMC → SR (Total Effect)	-.01	.01	-.02	.01	
Context Renewal Trial 2					
Discrimination → SR (b path)	.26	..71	-1.17	1.69	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
NMC → SR (Direct Effect)	.04	.01	-.01	.06	
NMC → SR (Total Effect)	.04	.01	.01	.06	
Context Renewal Trial 3					
Discrimination → SR (b path)	-.27	.15	-.58	.03	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.00	
NMC → SR (Total Effect)	-.01	.00	-.01	.00	
Context Renewal Trial 4					
Discrimination → SR (b path)	-.27	.22	-.72	.19	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.01	

Table 21. Negative Mood Change (NMC) and Spontaneous Recovery SCR

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	-.01	.01	

SCR during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.59	.15	-.90	-.28	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.01	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.26	.45	-2.16	-.35	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
NMC → SR (Direct Effect)	.00	.01	-.02	.02	
NMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-1.44	.41	-2.26	-.63	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
NMC → SR (Direct Effect)	.00	.01	-.02	.02	
NMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.57	.23	-1.04	-.10	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	.19	.17	-.15	.54	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.58	.48	-1.55	.39	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.01	-.02	.02	
NMC → SR (Total Effect)	.00	.01	-.02	.02	
SCR during CS-					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.42	.50	-1.43	.59	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.01	.-.02	.02	
NMC → SR (Total Effect)	.00	.01	-.02	.02	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.34	.13	-.60	-.08	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.00	
NMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.40	.17	-.75	-.05	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.00	

NMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-1.23	.58	-2.38	-.07	*
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
NMC → SR (Direct Effect)	.00	.01	-.02	.03	
NMC → SR (Total Effect)	.00	.01	-.02	.03	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.38	.20	-.79	.02	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	-.01	.01	
NMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.74	.69	-3.12	-.36	*
NMC →Discrimination → SR (Indirect Effect)	.00	.01	-.02	.01	
NMC → SR (Direct Effect)	.00	.01	-.02	.03	
NMC → SR (Total Effect)	.00	.01	-.03	.03	

Table 22. Positive Mood Change (PMC) and Extinction US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.01	-.01	.01	
Extinction Expectancy during CS+					
Discrimination → Extinction (b path)	.23	.08	.06	.39	*
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PMC → Extinction (Direct Effect)	.01	.00	.00	.01	
PMC → Extinction (Total Effect)	.00	.01	-.01	.01	
Extinction Expectancy during CS-					
Discrimination → Extinction (b path)	.25	.06	.15	.36	*
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PMC → Extinction (Direct Effect)	.00	.00	.00	.01	
PMC → Extinction (Total Effect)	.00	.00	.00	.01	

Table 23. Positive Mood Change (PMC) and Context Renewal US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Expectancy during CS+					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	1.22	.73	-.24	2.67	

PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	-.01	.01	-.03	.02	
PMC → SR (Total Effect)	-.01	.01	-.03	.02	
All Context Renewal Trials					
Discrimination → SR (b path)	.47	.65	-.83	1.77	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.00	.01	-.02	.02	
Context Renewal Trial 1					
Discrimination → SR (b path)	2.04	.72	.60	3.49	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
PMC → SR (Direct Effect)	-.01	.01	-.03	.02	
PMC → SR (Total Effect)	-.01	.01	-.03	.02	
Context Renewal Trial 2					
Discrimination → SR (b path)	.39	.93	-1.48	2.26	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	-.01	.01	-.04	.02	
PMC → SR (Total Effect)	-.01	.01	-.03	.02	
Context Renewal Trial 3					
Discrimination → SR (b path)	.49	.75	-1.02	1.99	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.01	-.03	.02	
PMC → SR (Total Effect)	.00	.01	-.03	.02	
Context Renewal Trial 4					
Discrimination → SR (b path)	-1.06	.66	-2.38	.25	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.00	.01	-02	.02	
<u>Expectancy during CS-</u>					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	-.01	.61	-1.22	1.20	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	-.01	.01	-.03	.01	
PMC → SR (Total Effect)	-.01	.01	-.03	.01	
All Context Renewal Trials					
Discrimination → SR (b path)	-.57	.48	-1.52	.38	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.01	-.01	.02	
PMC → SR (Total Effect)	.00	.01	-.01	.02	
Context Renewal Trial 1					
Discrimination → SR (b path)	.34	.76	-1.19	1.87	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	-.02	.01	-.04	.01	
PMC → SR (Total Effect)	-.02	.01	-.04	.01	
Context Renewal Trial 2					
Discrimination → SR (b path)	-.36	.64	-1.64	.92	

PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.01	.01	-.01	.03	
PMC → SR (Total Effect)	.01	.01	-.01	.03	
Context Renewal Trial 3					
Discrimination → SR (b path)	-.88	.47	-1.82	.06	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.01	.01	-.01	.02	
PMC → SR (Total Effect)	.01	.01	-.01	.02	
Context Renewal Trial 4					
Discrimination → SR (b path)	-1.38	.52	-2.43	-.34	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.01	.01	-.01	.02	
PMC → SR (Total Effect)	.01	.01	-.01	.02	

Table 24. Positive Mood Change (PMC) and Spontaneous Recovery US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Expectancy during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.40	.77	-1.95	1.15	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.03	.02	
PMC → SR (Total Effect)	.00	.01	-.03	.02	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.32	.58	-1.49	.85	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	.11	.81	-1.52	1.74	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.01	-.03	.03	
PMC → SR (Total Effect)	.00	.01	-.03	.02	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.91	.90	-2.71	.88	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.03	.03	
PMC → SR (Total Effect)	.00	.01	-.03	.03	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.37	.66	-1.69	.94	

PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.12	.45	-1.02	.79	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.01	-.01	.02	
PMC → SR (Total Effect)	.00	.01	-.01	.02	
Expectancy during CS-					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.53	.59	-2.70	-.35	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.00	.01	-.02	.02	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.30	.40	-2.10	-.51	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.01	.02	
PMC → SR (Total Effect)	.00	.01	-.01	.02	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.68	.80	-2.29	.93	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.03	
PMC → SR (Total Effect)	.00	.01	-.02	.03	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-2.37	.53	-3.44	-1.30	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-1.09	.44	-1.96	-.21	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.01	.01	-.01	.02	
PMC → SR (Total Effect)	.00	.01	-.01	.02	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.07	.35	-1.77	-.36	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.01	.01	.00	.02	
PMC → SR (Total Effect)	.01	.01	-.01	.02	

Table 25. Negative Mood Change (NMC) and Extinction US Expectancy

	b	SE	LLCI	ULCI	sig

A Path				
NMC → Discrimination (a path)	.00	.01	-.01	.02
Extinction Expectancy during CS+				
Discrimination → Extinction (b path)	.22	.08	.05	.39
NMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00
NMC → Extinction (Direct Effect)	.00	.01	-.01	.01
NMC → Extinction (Total Effect)	.00	.01	-.01	.01
Extinction Expectancy during CS-				
Discrimination → Extinction (b path)	.25	.06	.14	.36
NMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00
NMC → Extinction (Direct Effect)	.00	.00	-.01	.00
NMC → Extinction (Total Effect)	.00	.00	-.01	.01

Table 26. Negative Mood Change (NMC) and Context Renewal US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.01	
Expectancy during CS+					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	1.16	.72	-.29	2.61	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
NMC → SR (Direct Effect)	.01	.01	-.01	.04	
NMC → SR (Total Effect)	.01	.01	-.01	.04	
All Context Renewal Trials					
Discrimination → SR (b path)	.42	.65	-.87	1.71	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
NMC → SR (Direct Effect)	.01	.01	-.01	.03	
NMC → SR (Total Effect)	.01	.01	-.01	.03	
Context Renewal Trial 1					
Discrimination → SR (b path)	1.98	.72	.54	3.42	*
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
NMC → SR (Direct Effect)	.01	.01	-.01	.04	
NMC → SR (Total Effect)	.02	.01	-.01	.04	
Context Renewal Trial 2					
Discrimination → SR (b path)	.34	.93	-1.53	2.20	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
NMC → SR (Direct Effect)	.01	.02	-.02	.04	
NMC → SR (Total Effect)	.01	.02	-.02	.04	
Context Renewal Trial 3					
Discrimination → SR (b path)	.45	.75	-1.05	1.95	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
NMC → SR (Direct Effect)	.01	.01	-.02	.04	
NMC → SR (Total Effect)	.01	.01	-.02	.04	

Context Renewal Trial 4					
Discrimination → SR (b path)	-1.08	.66	-2.40	.23	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.01	.01	-.02	.03	
NMC → SR (Total Effect)	.01	.01	-.02	.03	
Expectancy during CS-					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	.01	.61	-1.20	1.22	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	-.01	.01	-.03	.01	
NMC → SR (Total Effect)	-.01	.01	-.03	.01	
All Context Renewal Trials					
Discrimination → SR (b path)	-.55	.47	-1.50	.40	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	-.01	.01	-.02	.01	
NMC → SR (Total Effect)	-.01	.01	-.02	.01	
Context Renewal Trial 1					
Discrimination → SR (b path)	.35	.78	-1.21	1.90	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
NMC → SR (Direct Effect)	-.01	.01	-.04	.02	
NMC → SR (Total Effect)	-.01	.01	-.04	.02	
Context Renewal Trial 2					
Discrimination → SR (b path)	-.32	.64	-1.60	.96	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	-.01	.01	-.03	.02	
NMC → SR (Total Effect)	-.01	.01	-.03	.01	
Context Renewal Trial 3					
Discrimination → SR (b path)	-.86	.47	-1.81	.09	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.02	.01	
NMC → SR (Total Effect)	.00	.01	-.02	.01	
Context Renewal Trial 4					
Discrimination → SR (b path)	-1.36	.52	-2.41	-.31	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
NMC → SR (Direct Effect)	.00	.01	-.02	.02	
NMC → SR (Total Effect)	.00	.01	-.02	.02	

Table 27. Negative Mood Change (NMC) and Spontaneous Recovery US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.01	

Expectancy during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.38	.77	-1.92	1.17	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	-.01	.01	-.04	.02	
NMC → SR (Total Effect)	-.01	.01	-.04	.02	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.30	.58	-1.47	.87	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	-.01	.01	-.03	.02	
NMC → SR (Total Effect)	-.01	.01	-.03	.02	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	.18	.80	-1.43	1.79	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
NMC → SR (Direct Effect)	-.02	.02	-.05	.01	
NMC → SR (Total Effect)	-.02	.01	-.05	.01	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.93	.90	-2.73	.87	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
NMC → SR (Direct Effect)	.00	.02	-.03	.04	
NMC → SR (Total Effect)	.00	.02	-.03	.04	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.38	.66	-1.70	.94	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.02	.03	
NMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.08	.45	-.97	.82	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	-.01	.01	-.03	.01	
NMC → SR (Total Effect)	-.01	.01	-.03	.01	
Expectancy during CS-					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.48	.58	-2.65	-.32	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
NMC → SR (Direct Effect)	-.01	.01	-.03	.01	
NMC → SR (Total Effect)	-.01	.01	-.04	.01	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.27	.40	-2.07	-.48	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
NMC → SR (Direct Effect)	-.01	.01	-.02	.01	
NMC → SR (Total Effect)	-.01	.01	-.02	.01	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.60	.79	-2.19	.98	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	-.02	.01	-.05	.01	

NMC → SR (Total Effect)	-.02	.01	-.05	.01	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-2.36	.53	-3.43	-1.29	*
NMC →Discrimination → SR (Indirect Effect)	.00	.01	-.01	.01	
NMC → SR (Direct Effect)	.00	.01	-.02	.02	
NMC → SR (Total Effect)	.00	.01	-.03	.02	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-1.08	.44	-1.96	-.20	*
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.02	.02	
NMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.05	.36	-1.77	-.34	*
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.02	.01	
NMC → SR (Total Effect)	.00	.01	-.02	.01	

Table 28. Positive Mood Change (PMC) and Extinction Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Heart Rate during CS+					
Discrimination → Extinction (b path)	.12	.72	-1.32	1.55	
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PMC → Extinction (Direct Effect)	.00	.00	.00	.00	
PMC → Extinction (Total Effect)	.00	.00	.00	.00	
Extinction Heart Rate during CS-					
Discrimination → Extinction (b path)	.33	.73	-1.14	1.79	
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PMC → Extinction (Direct Effect)	.00	.00	.00	.00	
PMC → Extinction (Total Effect)	.00	.00	.00	.00	

Table 29. Positive Mood Change (PMC) and Context Renewal Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Heart Rate during CS+					
First 2 Context Renewal Trials					

Discrimination → SR (b path)	1.03	1.07	-1.11	3.18	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
All Context Renewal Trials					
Discrimination → SR (b path)	.33	1.03	-1.74	2.40	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
Context Renewal Trial 1					
Discrimination → SR (b path)	-.78	.99	-2.78	1.21	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
Context Renewal Trial 2					
Discrimination → SR (b path)	2.85	1.22	.40	5.29	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
Context Renewal Trial 3					
Discrimination → SR (b path)	.11	1.12	-2.15	2.36	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
Context Renewal Trial 4					
Discrimination → SR (b path)	-.84	.98	-2.82	1.13	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
<u>Heart Rate during CS-</u>					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	.25	1.01	-1.80	2.30	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.00	
PMC → SR (Total Effect)	.00	.00	.00	.00	
All Context Renewal Trials					
Discrimination → SR (b path)	-.02	1.06	-2.15	2.11	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.00	
PMC → SR (Total Effect)	.00	.00	.00	.00	
Context Renewal Trial 1					
Discrimination → SR (b path)	.15	1.08	-2.01	2.32	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.00	
PMC → SR (Total Effect)	.00	.00	.00	.00	
Context Renewal Trial 2					

Discrimination → SR (b path)	.35	1.00	-1.66	2.35
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.01
PMC → SR (Total Effect)	.00	.00	.00	.01
Context Renewal Trial 3				
Discrimination → SR (b path)	-1.26	1.15	-3.56	1.05
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.01
PMC → SR (Total Effect)	.00	.00	.00	.01
Context Renewal Trial 4				
Discrimination → SR (b path)	.68	1.27	-1.87	3.23
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.01
PMC → SR (Total Effect)	.00	.00	.00	.01

Table 30. Positive Mood Change (PMC) and Spontaneous Recovery Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Heart Rate during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.29	1.02	-2.34	1.77	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.52	1.03	-2.59	1.56	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	.10	1.05	-2.02	2.21	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.67	1.03	-2.74	1.40	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.00	.00	.01	
PMC → SR (Total Effect)	.00	.00	.00	.01	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.61	1.06	-2.73	1.52	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	

PMC → SR (Direct Effect)	.00	.00	.00	.01
PMC → SR (Total Effect)	.00	.00	.00	.01
Spontaneous Recovery Trial 4				
Discrimination → SR (b path)	-.88	1.09	-3.06	1.30
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.01
PMC → SR (Total Effect)	.00	.00	.00	.01
Heart Rate during CS-				
First 2 Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.64	.98	-2.60	1.32
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.00
PMC → SR (Total Effect)	.00	.00	.00	.00
All Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.37	1.00	-2.37	1.63
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.00
PMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 1				
Discrimination → SR (b path)	-.66	`.93	-2.53	1.20
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.00
PMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 2				
Discrimination → SR (b path)	-.62	1.06	-2.74	1.51
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.01
PMC → SR (Total Effect)	.00	.00	.00	.01
Spontaneous Recovery Trial 3				
Discrimination → SR (b path)	.34	1.20	-2.06	2.74
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.01
PMC → SR (Total Effect)	.00	.00	.00	.01
Spontaneous Recovery Trial 4				
Discrimination → SR (b path)	-.54	.98	-2.51	1.43
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PMC → SR (Direct Effect)	.00	.00	.00	.00
PMC → SR (Total Effect)	.00	.00	.00	.00

Table 31. Negative Mood Change (NMC) and Extinction Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.00	

Extinction Heart Rate during CS+				
Discrimination → Extinction (b path)	.14	.70	-1.27	1.54
NMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00
NMC → Extinction (Direct Effect)	.00	.00	-.01	.00
NMC → Extinction (Total Effect)	.00	.00	-.01	.00
Extinction Heart Rate during CS-				
Discrimination → Extinction (b path)	.34	.72	-1.10	1.78
NMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00
NMC → Extinction (Direct Effect)	.00	.00	.00	.00
NMC → Extinction (Total Effect)	.00	.00	.00	.00

Table 32. Negative Mood Change (NMC) and Context Renewal Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.00	
Heart Rate during CS+					
First 2 Context Renewal Trials					
Discrimination → SR (b path)	1.02	1.10	-1.19	3.23	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	.00	.00	
NMC → SR (Total Effect)	.00	.00	.00	.00	
All Context Renewal Trials					
Discrimination → SR (b path)	.32	1.06	-1.82	2.46	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	.00	.00	
NMC → SR (Total Effect)	.00	.00	.00	.00	
Context Renewal Trial 1					
Discrimination → SR (b path)	-.79	1.02	-2.85	1.26	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	.00	.00	
NMC → SR (Total Effect)	.00	.00	.00	.00	
Context Renewal Trial 2					
Discrimination → SR (b path)	2.84	1.25	.33	5.35	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	.00	.00	
NMC → SR (Total Effect)	.00	.00	.00	.00	
Context Renewal Trial 3					
Discrimination → SR (b path)	.11	1.15	-2.20	2.41	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.00	.00	.00	.00	
NMC → SR (Total Effect)	.00	.00	.00	.00	
Context Renewal Trial 4					
Discrimination → SR (b path)	-.87	1.03	-2.94	1.19	

NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Heart Rate during CS-				
First 2 Context Renewal Trials				
Discrimination → SR (b path)	.24	1.04	-1.85	2.32
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
All Context Renewal Trials				
Discrimination → SR (b path)	-.02	1.08	-2.20	2.15
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Context Renewal Trial 1				
Discrimination → SR (b path)	.16	1.09	-2.02	2.34
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Context Renewal Trial 2				
Discrimination → SR (b path)	.32	1.03	-1.74	2.37
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Context Renewal Trial 3				
Discrimination → SR (b path)	-1.24	1.18	-3.62	1.13
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	-.01	.00
NMC → SR (Total Effect)	.00	.00	-.01	.00
Context Renewal Trial 4				
Discrimination → SR (b path)	.67	1.28	-1.91	3.24
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00

Table 33. Negative Mood Change (NMC) and Spontaneous Recovery Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.00	
Heart Rate during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.36	1.07	-2.52	1.79	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	

NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
All Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.61	1.07	-2.76	1.54
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 1				
Discrimination → SR (b path)	-.01	1.11	-2.24	2.22
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 2				
Discrimination → SR (b path)	-.72	1.07	-2.87	1.43
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 3				
Discrimination → SR (b path)	-.73	1.08	-2.90	1.44
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 4				
Discrimination → SR (b path)	-.98	1.11	-3.22	1.25
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
<u>Heart Rate during CS-</u>				
First 2 Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.73	1.00	-2.75	1.28
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
All Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.45	1.02	-2.50	1.61
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 1				
Discrimination → SR (b path)	-.74	.95	-2.65	1.17
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 2				
Discrimination → SR (b path)	-.72	1.08	-2.90	1.45
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00

NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 3				
Discrimination → SR (b path)	.26	1.22	-2.18	2.70
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00
Spontaneous Recovery Trial 4				
Discrimination → SR (b path)	-.58	1.01	-2.60	1.45
NMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NMC → SR (Direct Effect)	.00	.00	.00	.00
NMC → SR (Total Effect)	.00	.00	.00	.00

Table 34. Positive Mood Change (PMC) and Extinction Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Fear Ratings for CS+					
Discrimination → Extinction (b path)	-1.81	1.20	-4.19	.57	
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	
PMC → Extinction (Direct Effect)	.01	.01	-.01	.03	
PMC → Extinction (Total Effect)	.01	.01	-.01	.03	
Extinction Fear Ratings for CS-					
Discrimination → Extinction (b path)	-5.38	.91	-7.20	-3.57	*
PMC →Discrimination → Extinction (Indirect Effect)	.00	.01	-.01	.01	
PMC → Extinction (Direct Effect)	.01	.01	-.01	.03	
PMC → Extinction (Total Effect)	.01	.01	-.01	.03	

Table 35. Positive Mood Change (PMC) and Return of Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Fear Ratings for CS+					
Context Renewal					
Discrimination → SR (b path)	-.20	1.30	-2.79	2.40	
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	-.01	.01	-.04	.02	
PMC → SR (Total Effect)	-.01	.01	-.04	.02	
Spontaneous Recovery					

Discrimination → SR (b path)	-2.04	1.34	-4.70	.63	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
PMC → SR (Direct Effect)	-.01	.01	-.04	.02	
PMC → SR (Total Effect)	-.01	.01	-.04	.02	
Fear Ratings for CS-					
Context Renewal					
Discrimination → SR (b path)	-2.48	1.11	-4.69	-.27	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
PMC → SR (Direct Effect)	.01	.01	-.02	.03	
PMC → SR (Total Effect)	.01	.01	-.02	.03	
Spontaneous Recovery					
Discrimination → SR (b path)	-4.07	.96	-5.99	-2.15	*
PMC → Discrimination → SR (Indirect Effect)	.00	.01	-.01	.01	
PMC → SR (Direct Effect)	.00	.01	-.02	.02	
PMC → SR (Total Effect)	.00	.01	-.02	.02	

Table 36. Negative Mood Change (NMC) and Extinction Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Fear Ratings for CS+					
Discrimination → Extinction (b path)	-1.93	1.22	-4.35	.49	
NMC → Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00	
NMC → Extinction (Direct Effect)	.01	.01	-.02	.04	
NMC → Extinction (Total Effect)	.00	.01	-.02	.03	
Extinction Fear Ratings for CS-					
Discrimination → Extinction (b path)	-5.44	.93	-7.29	-3.59	*
NMC → Discrimination → Extinction (Indirect Effect)	-.01	.01	-.02	.00	
NMC → Extinction (Direct Effect)	.00	.01	-.02	.03	
NMC → Extinction (Total Effect)	-.01	.01	-.03	.02	

Table 37. Negative Mood Change (NMC) and Return of Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					

NMC → Discrimination (a path)	.00	.00	.00	.01	
Fear Ratings for CS+					
Context Renewal					
Discrimination → SR (b path)	-.14	1.36	-2.85	2.57	
NMC →Discrimination → SR (Indirect Effect)	.00	.01	-.01	.01	
NMC → SR (Direct Effect)	.00	.02	-.04	.03	
NMC → SR (Total Effect)	.00	.02	-.03	.03	
Spontaneous Recovery					
Discrimination → SR (b path)	-2.22	1.39	-5.00	.55	
NMC →Discrimination → SR (Indirect Effect)	-.01	.01	-.03	.00	
NMC → SR (Direct Effect)	.01	.02	-.03	.04	
NMC → SR (Total Effect)	.00	.02	-.03	.03	
Fear Ratings for CS-					
Context Renewal					
Discrimination → SR (b path)	-2.53	1.15	-4.83	-.22	*
NMC →Discrimination → SR (Indirect Effect)	-.01	.01	-.02	.00	
NMC → SR (Direct Effect)	.00	.01	-.03	.03	
NMC → SR (Total Effect)	-.01	.01	-.03	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-4.28	1.00	-6.27	-2.29	*
NMC →Discrimination → SR (Indirect Effect)	-.01	.01	-.03	.00	
NMC → SR (Direct Effect)	.01	.01	-.02	.03	
NMC → SR (Total Effect)	-.01	.01	-.03	.02	

Table 38. Positive Mood Change (PMC) and Extinction Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Valence Ratings for CS+					
Discrimination → Extinction (b path)	.39	.70	-1.01	1.79	
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PMC → Extinction (Direct Effect)	.00	.01	-.01	.01	
PMC → Extinction (Total Effect)	.00	.01	-.01	.01	
Extinction Valence Ratings for CS-					
Discrimination → Extinction (b path)	-1.73	.64	-3.00	-.45	*
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00	
PMC → Extinction (Direct Effect)	.00	.01	-.01	.01	
PMC → Extinction (Total Effect)	.00	.01	-.01	.01	

Table 39. Positive Mood Change (PMC) and Return of Fear Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Valence Ratings for CS+					
Context Renewal					
Discrimination → SR (b path)	1.32	.68	-.04	2.68	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	.01	.01	-.01	.02	
PMC → SR (Total Effect)	.01	.01	-.01	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-.28	.76	-1.80	1.24	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.01	-.01	.02	
PMC → SR (Total Effect)	.00	.01	-.01	.02	
Valence Ratings for CS-					
Context Renewal					
Discrimination → SR (b path)	-.19	.59	-1.37	.99	
PMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PMC → SR (Direct Effect)	.00	.01	-.02	.01	
PMC → SR (Total Effect)	.00	.01	-.02	.01	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.48	.61	-2.69	-.27	*
PMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PMC → SR (Direct Effect)	.00	.01	-.01	.01	
PMC → SR (Total Effect)	.00	.01	-.01	.01	

Table 40. Negative Mood Change (NMC) and Extinction Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Valence Ratings for CS+					
Discrimination → Extinction (b path)	.40	.70	-1.00	1.79	
NMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
NMC → Extinction (Direct Effect)	.00	.01	-.02	.01	
NMC → Extinction (Total Effect)	.00	.01	-.02	.01	
Extinction Valence Ratings for CS-					
Discrimination → Extinction (b path)	-1.73	.64	-3.00	-.45	*
NMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
NMC → Extinction (Direct Effect)	.00	.01	-.01	.02	
NMC → Extinction (Total Effect)	.00	.01	-.01	.02	

Table 41. Negative Mood Change (NMC) and Return of Fear Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.00	
Valence Ratings for CS+					
Context Renewal					
Discrimination → SR (b path)	1.39	.68	.03	2.75	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.01	.02	
NMC → SR (Total Effect)	.00	.01	-.01	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-.22	.76	-1.74	1.29	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.01	.01	-.01	.02	
NMC → SR (Total Effect)	.01	.01	-.01	.02	
Valence Ratings for CS-					
Context Renewal					
Discrimination → SR (b path)	-.18	.58	-1.33	.98	
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NMC → SR (Direct Effect)	.01	.01	-.00	.02	
NMC → SR (Total Effect)	.01	.01	.00	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.48	.60	-2.68	-.28	*
NMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
NMC → SR (Direct Effect)	.00	.01	-.02	.01	
NMC → SR (Total Effect)	.00	.01	-.02	.01	

Table 42. Positive Mood Change (PMC) and Extinction Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Arousal Ratings for CS+					
Discrimination → Extinction (b path)	-2.71	1.09	-4.89	-.54	*
PMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	

PMC → Extinction (Direct Effect)	.01	.01	-.01	.03	
PMC → Extinction (Total Effect)	.01	.01	-.01	.03	
Extinction Arousal Ratings for CS-					
Discrimination → Extinction (b path)	-4.01	.98	-5.96	-2.07	*
PMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	
PMC → Extinction (Direct Effect)	.01	.01	.00	.03	
PMC → Extinction (Total Effect)	.02	.01	.00	.04	

Table 43. Positive Mood Change (PMC) and Return of Fear Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PMC → Discrimination (a path)	.00	.00	.00	.00	
Arousal Ratings for CS+					
Context Renewal					
Discrimination → SR (b path)	-.66	.98	-2.61	1.29	
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	.01	.01	-.01	.03	
PMC → SR (Total Effect)	.01	.01	-.01	.03	
Spontaneous Recovery					
Discrimination → SR (b path)	-.55	1.25	-4.06	1.95	
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	.00	.01	-.02	.03	
PMC → SR (Total Effect)	.00	.01	-.02	.03	
Arousal Ratings for CS-					
Context Renewal					
Discrimination → SR (b path)	-1.29	1.04	-3.37	.79	
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	.01	.01	-.01	.04	
PMC → SR (Total Effect)	.02	.01	.00	.04	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.14	1.27	-3.68	1.40	
PMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PMC → SR (Direct Effect)	.01	.01	-.01	.04	
PMC → SR (Total Effect)	.01	.01	-.01	.04	

Table 44. Negative Mood Change (NMC) Extinction Arousal Ratings

	b	SE	LLCI	ULCI	sig

A Path					
NMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Arousal Ratings for CS+					
Discrimination → Extinction (b path)	-3.00	1.09	-5.16	-.83	*
NMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00	
NMC → Extinction (Direct Effect)	.02	.01	.00	.04	
NMC → Extinction (Total Effect)	.02	.01	-.01	.04	
Extinction Arousal Ratings for CS-					
Discrimination → Extinction (b path)	-4.11	1.00	-6.09	-2.13	*
NMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00	
NMC → Extinction (Direct Effect)	.00	.01	-.02	.02	
NMC → Extinction (Total Effect)	-.01	.01	-.03	.01	

Table 45. Negative Mood Change (NMC) and Return of Fear Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NMC → Discrimination (a path)	.00	.00	.00	.00	
Arousal Ratings for CS+					
Context Renewal					
Discrimination → SR (b path)	-.88	.98	-2.84	1.07	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.01	.01	-.01	.04	
NMC → SR (Total Effect)	.01	.01	-.01	.03	
Spontaneous Recovery					
Discrimination → SR (b path)	-.53	1.27	-3.06	2.00	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.03	.03	
NMC → SR (Total Effect)	.00	.01	-.03	.02	
Arousal Ratings for CS-					
Context Renewal					
Discrimination → SR (b path)	-1.37	1.07	-3.50	.77	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	.00	.01	-.03	.02	
NMC → SR (Total Effect)	.00	.01	-.03	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-.98	1.28	-3.53	1.57	
NMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NMC → SR (Direct Effect)	-.02	.01	-.05	.01	
NMC → SR (Total Effect)	-.02	.01	-.05	.01	

Table 46. Positive Acquisition Mood Change (PAMC) and Extinction SCR

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.01	
Extinction SCR during CS+					
Discrimination → Extinction (b path)	-.93	.56	-2.05	.20	
PAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	-.02	.00	
PAMC → Extinction (Direct Effect)	.01	.01	-.02	.03	
PAMC → Extinction (Total Effect)	.00	.01	-.02	.03	
Extinction SCR during CS-					
Discrimination → Extinction (b path)	-.04	.14	-.31	.24	
PAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PAMC → Extinction (Direct Effect)	.00	.00	.00	.01	
PAMC → Extinction (Total Effect)	.00	.00	.00	.01	

Table 47. Positive Acquisition Mood Change (PAMC) and Context Renewal SCR

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	-.34	.20	-.75	.07	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.01	
PAMC → CR (Total Effect)	.00	.00	-.01	.01	
All Context Renewal Trials					
Discrimination → CR (b path)	-.27	.14	-.56	.01	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.01	
PAMC → CR (Total Effect)	.00	.00	-.01	.01	
Context Renewal Trial 1					
Discrimination → CR (b path)	-.31	.31	-.93	.31	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.01	-.01	.01	
PAMC → CR (Total Effect)	.00	.01	-.01	.01	
Context Renewal Trial 2					
Discrimination → CR (b path)	-.37	.18	-.73	-.01	*
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.01	
PAMC → CR (Total Effect)	.00	.00	-.01	.01	

Context Renewal Trial 3					
Discrimination → CR (b path)	-.18	.14	-.47	.11	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	.00	.01	
PAMC → CR (Total Effect)	.00	.00	.00	.01	
Context Renewal Trial 4					
Discrimination → CR (b path)	.85	.57	-.29	2.00	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.02	.00	
PAMC → CR (Direct Effect)	-.01	.01	-.03	.02	
PAMC → CR (Total Effect)	-.01	.01	-.03	.02	
<u>SCR during CS-</u>					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	-.72	.23	-1.18	-.26	*
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	.00	.01	-.01	.01	
PAMC → CR (Total Effect)	.00	.01	-.01	.01	
All Context Renewal Trials					
Discrimination → CR (b path)	-1.07	.36	-1.80	-.33	*
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	.00	.01	-.02	.02	
PAMC → CR (Total Effect)	.00	.01	-.02	.02	
Context Renewal Trial 1					
Discrimination → CR (b path)	-.76	.28	-1.33	-.19	*
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	.00	.01	-.01	.01	
PAMC → CR (Total Effect)	.00	.01	-.01	.02	
Context Renewal Trial 2					
Discrimination → CR (b path)	.40	.76	-1.13	1.94	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
PAMC → CR (Direct Effect)	.00	.02	-.04	.03	
PAMC → CR (Total Effect)	.00	.02	-.04	.03	
Context Renewal Trial 3					
Discrimination → CR (b path)	-.30	.16	-.62	.01	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.01	
PAMC → CR (Total Effect)	.00	.00	-.01	.01	
Context Renewal Trial 4					
Discrimination → CR (b path)	-.26	.22	-.70	.19	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.01	
PAMC → CR (Total Effect)	.00	.00	-.01	.01	

Table 48. Positive Acquisition Mood Change (PAMC) and Spontaneous Recovery SCR

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.58	.15	-.88	-.28	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PAMC → SR (Direct Effect)	.00	.00	.00	.01	
PAMC → SR (Total Effect)	.00	.00	-.01	.01	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.26	.46	-2.17	-.34	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.02	
PAMC → SR (Direct Effect)	.00	.01	-.02	.02	
PAMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-1.44	.41	-2.26	-.61	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
PAMC → SR (Direct Effect)	.00	.01	-.01	.02	
PAMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.56	.23	-1.03	-.09	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	.00	.01	-.01	.01	
PAMC → SR (Total Effect)	.00	.01	-.01	.01	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	.18	.17	-.16	.53	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PAMC → SR (Direct Effect)	.00	.00	-.01	.01	
PAMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.57	.49	-1.55	.41	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	.01	.01	-.01	.03	
PAMC → SR (Total Effect)	.01	.01	-.01	.03	
SCR during CS-					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.41	.51	-1.43	.61	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PAMC → SR (Direct Effect)	.00	.01	-.02	.03	
PAMC → SR (Total Effect)	.01	.01	-.02	.03	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.34	.13	-.60	-.08	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	

PAMC → SR (Direct Effect)	.00	.00	-.01	.01	
PAMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.40	.17	-.74	-.05	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PAMC → SR (Direct Effect)	.00	.00	.00	.01	
PAMC → SR (Total Effect)	.00	.00	.00	.01	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-1.23	.58	-2.40	-.06	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.02	
PAMC → SR (Direct Effect)	.00	.01	-.03	.02	
PAMC → SR (Total Effect)	.00	.01	-.03	.02	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.38	.20	-.79	.02	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	.00	.00	-.01	.01	
PAMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.74	.69	-3.14	-.35	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.01	.00	.03	
PAMC → SR (Direct Effect)	.00	.02	-.03	.03	
PAMC → SR (Total Effect)	.00	.02	-.03	.03	

Table 49. Negative Acquisition Mood Change (NAMC) and Extinction SCR

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction SCR during CS+					
Discrimination → Extinction (b path)	-.89	.55	-2.00	.21	
NAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	
NAMC → Extinction (Direct Effect)	-.01	.01	-.03	.01	
P=NAMC → Extinction (Total Effect)	-.01	.01	-.03	.01	
Extinction SCR during CS-					
Discrimination → Extinction (b path)	-.02	.13	-.28	.25	
NAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
NAMC → Extinction (Direct Effect)	-.01	.00	-.01	.00	
NAMC → Extinction (Total Effect)	-.01	.00	-.01	.00	

Table 50. Negative Acquisition Mood Change (NAMC) and Context Renewal SCR

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	-.34	.20	-.74	.07	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	-.01	.01	
NAMC → CR (Total Effect)	.00	.00	-.01	.01	
All Context Renewal Trials					
Discrimination → CR (b path)	-.27	.14	-.56	.01	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	-.01	.01	
NAMC → CR (Total Effect)	.00	.00	-.01	.01	
Context Renewal Trial 1					
Discrimination → CR (b path)	-.31	.31	-.93	.31	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.01	-.01	.01	
NAMC → CR (Total Effect)	.00	.01	-.01	.01	
Context Renewal Trial 2					
Discrimination → CR (b path)	-.37	.18	-.73	-.01	*
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	.00	.01	
NAMC → CR (Total Effect)	.00	.00	.00	.01	
Context Renewal Trial 3					
Discrimination → CR (b path)	-.19	.15	-.48	.10	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	-.01	.01	
NAMC → CR (Total Effect)	.00	.00	-.01	.01	
Context Renewal Trial 4					
Discrimination → CR (b path)	.87	.57	-.27	2.01	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.02	
NAMC → CR (Direct Effect)	.00	.01	-.03	.02	
NAMC → CR (Total Effect)	.00	.01	-.03	.02	
SCR during CS-					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	-.72	.23	-1.18	-.26	*
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	.00	.00	-.01	.01	
NAMC → CR (Total Effect)	.00	.01	-.01	.01	
All Context Renewal Trials					
Discrimination → CR (b path)	-1.07	.36	-1.80	-.35	*
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	-.01	.01	
NAMC → CR (Direct Effect)	.01	.01	-.01	.02	
NAMC → CR (Total Effect)	.01	.01	-.01	.02	

Context Renewal Trial 1					
Discrimination → CR (b path)	-.77	.28	-1.33	-.20	*
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	.00	.01	-.01	.02	
NAMC → CR (Total Effect)	.00	.01	-.01	.02	
Context Renewal Trial 2					
Discrimination → CR (b path)	.42	.76	-1.11	1.95	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
NAMC → CR (Direct Effect)	-.01	.02	-.04	.02	
NAMC → CR (Total Effect)	-.01	.02	-.04	.02	
Context Renewal Trial 3					
Discrimination → CR (b path)	-.30	.16	-.61	.01	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	.00	.01	
NAMC → CR (Total Effect)	.00	.00	.00	.01	
Context Renewal Trial 4					
Discrimination → CR (b path)	-.27	.22	-.71	.18	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	-.01	.01	
NAMC → CR (Total Effect)	.00	.00	-.01	.01	

Table 51. Negative Acquisition Mood Change (NAMC) and Spontaneous Recovery SCR

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.60	.15	-.89	-.30	*
NAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	.00	.01	
NAMC → SR (Total Effect)	.00	.00	.00	.01	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.28	.45	-2.19	-.37	*
NAMC → Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
NAMC → SR (Direct Effect)	.01	.01	-.01	.03	
NAMC → SR (Total Effect)	.01	.01	-.01	.03	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-1.47	.41	-2.28	-.66	*
NAMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	

NAMC → SR (Direct Effect)	.01	.01	-.01	.03	
NAMC → SR (Total Effect)	.01	.01	-.01	.03	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.57	.23	-1.03	-.10	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.01	
NAMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	.19	.17	-.16	.54	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.01	
NAMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.58	.49	-1.57	.41	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.00	.01	-.02	.02	
NAMC → SR (Total Effect)	.00	.01	-.02	.02	
<u>SCR during CS-</u>					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.41	.51	-1.43	.61	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.01	-.02	.02	
NAMC → SR (Total Effect)	.00	.01	-.02	.02	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.35	.13	-.61	-.09	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	.00	.01	
NAMC → SR (Total Effect)	.00	.00	.00	.01	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.41	.17	-.76	-.07	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	.00	.01	
NAMC → SR (Total Effect)	.00	.00	.00	.01	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-1.25	.58	-2.42	-.09	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
NAMC → SR (Direct Effect)	.01	.01	-.01	.03	
NAMC → SR (Total Effect)	.01	.01	-.02	.03	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.39	.20	-.80	.01	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.01	
NAMC → SR (Total Effect)	.00	.00	-.01	.01	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.76	.69	-3.15	-.37	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.01	-.03	.00	

NAMC → SR (Direct Effect)	.01	.01	-.02	.04	
NAMC → SR (Total Effect)	.01	.01	-.02	.04	

Table 52. Positive Acquisition Mood Change (PAMC) and Extinction US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.01	.01	-.01	.02	
Extinction US Expectancy during CS+					
Discrimination → Extinction (b path)	.23	.08	.06	.40	*
PAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	
PAMC → Extinction (Direct Effect)	-.01	.01	-.02	.01	
PAMC → Extinction (Total Effect)	.00	.01	-.01	.01	
Extinction US Expectancy during CS-					
Discrimination → Extinction (b path)	.26	.06	.15	.37	*
PAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	
PAMC → Extinction (Direct Effect)	.00	.00	-.01	.00	
PAMC → Extinction (Total Effect)	.00	.00	-.01	.01	

Table 53. Positive Acquisition Mood Change (PAMC) and Context Renewal US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	-.01	.00	
US Expectancy during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	1.20	.74	-.28	2.69	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.02	.00	
PAMC → CR (Direct Effect)	.00	.02	-.03	.03	
PAMC → CR (Total Effect)	-.01	.02	-.04	.02	
All Context Renewal Trials					
Discrimination → CR (b path)	.44	.66	-.88	1.76	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
PAMC → CR (Direct Effect)	-.01	.01	-.03	.02	
PAMC → CR (Total Effect)	-.01	.01	-.03	.02	
Context Renewal Trial 1					
Discrimination → CR (b path)	2.10	.74	.62	3.58	*

PAMC → Discrimination → CR (Indirect Effect)	-.01	.01	-.02	.00	
PAMC → CR (Direct Effect)	.01	.02	-.02	.04	
PAMC → CR (Total Effect)	.00	.02	-.03	.04	
Context Renewal Trial 2					
Discrimination → CR (b path)	.31	.94	-1.57	2.19	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.01	
PAMC → CR (Direct Effect)	-.02	.02	-.06	.02	
PAMC → CR (Total Effect)	-.02	.02	-.06	.02	
Context Renewal Trial 3					
Discrimination → CR (b path)	.50	.76	-1.03	2.02	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
PAMC → CR (Direct Effect)	.00	.02	-.03	.03	
PAMC → CR (Total Effect)	.00	.02	-.03	.03	
Context Renewal Trial 4					
Discrimination → CR (b path)	-1.15	.66	-2.47	.17	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.02	
PAMC → CR (Direct Effect)	-.02	.01	-.04	.01	
PAMC → CR (Total Effect)	-.01	.01	-.04	.01	
<u>US Expectancy during CS-</u>					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	.04	.61	-1.19	1.26	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
PAMC → CR (Direct Effect)	.00	.01	-.02	.03	
PAMC → CR (Total Effect)	.00	.01	-.02	.03	
All Context Renewal Trials					
Discrimination → CR (b path)	-.59	.48	-1.55	.37	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	-.01	.01	-.03	.01	
PAMC → CR (Total Effect)	.00	.01	-.02	.02	
Context Renewal Trial 1					
Discrimination → CR (b path)	.52	.77	-1.02	2.06	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
PAMC → CR (Direct Effect)	.02	.02	-.01	.05	
PAMC → CR (Total Effect)	.02	.02	-.01	.05	
Context Renewal Trial 2					
Discrimination → CR (b path)	-.44	.64	-1.73	.84	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	-.02	.01	-.04	.01	
PAMC → CR (Total Effect)	-.02	.01	-.04	.01	
Context Renewal Trial 3					
Discrimination → CR (b path)	-.95	.47	-1.90	-.01	*
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	-.01	.01	-.03	.01	
PAMC → CR (Total Effect)	-.01	.01	-.03	.01	
Context Renewal Trial 4					
Discrimination → CR (b path)	-1.48	.52	-2.52	-.43	*

PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.02
PAMC → CR (Direct Effect)	-.02	.01	-.04	.01
PAMC → CR (Total Effect)	-.01	.01	-.03	.01

Table 54. Positive Acquisition Mood Change (PAMC) and Spontaneous Recovery SCR

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	-.01	.00	
US Expectancy during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.47	.78	-2.04	1.09	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.02	
PAMC → SR (Direct Effect)	-.01	.02	-.04	.03	
PAMC → SR (Total Effect)	.00	.02	-.04	.03	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.39	.59	-1.58	.80	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	-.01	.01	-.03	.02	
PAMC → SR (Total Effect)	-.01	.01	-.03	.02	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	.07	.83	-1.59	1.72	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.01	
PAMC → SR (Direct Effect)	.00	.02	-.04	.03	
PAMC → SR (Total Effect)	.00	.02	-.04	.03	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-1.01	.91	-2.83	.81	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.02	
PAMC → SR (Direct Effect)	-.01	.02	-.05	.03	
PAMC → SR (Total Effect)	-.01	.02	-.04	.03	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.41	.66	-1.75	.92	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	-.01	.01	-.04	.02	
PAMC → SR (Total Effect)	-.01	.01	-.03	.02	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-.19	.45	-1.10	.72	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	-.01	.01	-.03	.01	
PAMC → SR (Total Effect)	-.01	.01	-.03	.01	
US Expectancy during CS-					
First 2 Spontaneous Recovery Trials					

Discrimination → SR (b path)	-1.56	.59	-2.75	-.37	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.02	
PAMC → SR (Direct Effect)	.00	.01	-.03	.02	
PAMC → SR (Total Effect)	.00	.01	-.02	.03	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.33	.41	-2.14	-.52	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	.00	.01	-.02	.01	
PAMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.72	.80	-2.32	.89	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.02	
PAMC → SR (Direct Effect)	.00	.02	-.03	.04	
PAMC → SR (Total Effect)	.01	.02	-.03	.04	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-2.41	.54	-3.49	-1.33	*
PAMC → Discrimination → SR (Indirect Effect)	.01	.01	.00	.02	
PAMC → SR (Direct Effect)	-.01	.01	-.03	.01	
PAMC → SR (Total Effect)	.00	.01	-.03	.02	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-1.07	.45	-1.96	-.17	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	.00	.01	-.02	.02	
PAMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.13	.36	-1.84	-.42	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	-.01	.01	-.03	.00	
PAMC → SR (Total Effect)	-.01	.01	-.02	.01	

Table 55. Negative Acquisition Mood Change (NAMC) and Extinction US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.02	.01	-.01	.04	
Extinction Expectancy during CS+					
Discrimination → Extinction (b path)	.19	.09	.01	.36	*
NAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	
NAMC → Extinction (Direct Effect)	.01	.01	.00	.02	
P=NAMC → Extinction (Total Effect)	.01	.01	.00	.02	
Extinction Expectancy during CS-					
Discrimination → Extinction (b path)	.22	.06	.11	.34	*

NAMC → Discrimination → Extinction (Indirect Effect)	.01	.00	.00	.02
NAMC → Extinction (Direct Effect)	.01	.00	.00	.01
NAMC → Extinction (Total Effect)	.01	.00	.00	.02

Table 56. Negative Acquisition Mood Change (NAMC) and Context Renewal US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.01	
Expectancy during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	1.15	.73	-.31	2.61	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.02	
NAMC → CR (Direct Effect)	.01	.01	-.01	.04	
NAMC → CR (Total Effect)	.02	.01	-.01	.05	
All Context Renewal Trials					
Discrimination → CR (b path)	.39	.65	-.91	1.69	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
NAMC → CR (Direct Effect)	.02	.01	-.01	.04	
NAMC → CR (Total Effect)	.02	.01	-.01	.04	
Context Renewal Trial 1					
Discrimination → CR (b path)	1.93	.73	.48	3.38	*
NAMC → Discrimination → CR (Indirect Effect)	.00	.01	-.01	.02	
NAMC → CR (Direct Effect)	.02	.01	-.01	.05	
NAMC → CR (Total Effect)	.02	.02	-.01	.05	
Context Renewal Trial 2					
Discrimination → CR (b path)	.37	.94	-1.51	2.26	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.02	
NAMC → CR (Direct Effect)	.01	.02	-.03	.05	
NAMC → CR (Total Effect)	.01	.02	-.03	.05	
Context Renewal Trial 3					
Discrimination → CR (b path)	.41	.75	-1.09	1.92	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
NAMC → CR (Direct Effect)	.02	.01	-.01	.05	
NAMC → CR (Total Effect)	.02	.01	-.01	.05	
Context Renewal Trial 4					
Discrimination → CR (b path)	-1.15	.65	-2.45	.16	
NAMC → Discrimination → CR (Indirect Effect)	.00	.01	-.02	.00	
NAMC → CR (Direct Effect)	.02	.01	-.01	.05	
NAMC → CR (Total Effect)	.02	.01	-.01	.04	

Expectancy during CS-					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	-.02	.61	-1.24	1.19	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.01	.01	-.02	.03	
NAMC → CR (Total Effect)	.01	.01	-.02	.03	
All Context Renewal Trials					
Discrimination → CR (b path)	-.59	.48	-1.54	.37	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	.01	.01	-.01	.03	
NAMC → CR (Total Effect)	.01	.01	-.01	.03	
Context Renewal Trial 1					
Discrimination → CR (b path)	.32	.78	-1.24	1.88	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
NAMC → CR (Direct Effect)	.01	.02	-.02	.04	
NAMC → CR (Total Effect)	.01	.02	-.02	.04	
Context Renewal Trial 2					
Discrimination → CR (b path)	-.36	.65	-1.66	.93	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	.01	.01	-.02	.03	
NAMC → CR (Total Effect)	.01	.01	-.02	.03	
Context Renewal Trial 3					
Discrimination → CR (b path)	-.89	.48	-1.85	.06	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	.01	.01	-.01	.03	
NAMC → CR (Total Effect)	.00	.01	-.01	.02	
Context Renewal Trial 4					
Discrimination → CR (b path)	-1.41	.53	-2.47	-.35	*
NAMC →Discrimination → CR (Indirect Effect)	.00	.01	-.02	.00	
NAMC → CR (Direct Effect)	.01	.01	-.01	.03	
NAMC → CR (Total Effect)	.01	.01	-.02	.03	

Table 57. Negative Acquisition Mood Change (NAMC) and Spontaneous Recovery US Expectancy

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.01	
Expectancy during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.67	.72	-2.12	.78	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.04	.01	-.01	.07	

NAMC → SR (Total Effect)	.04	.01	-.01	.07	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.49	.56	-1.62	.63	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.03	.01	-.01	.05	
NAMC → SR (Total Effect)	.03	.01	-.01	.05	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.19	.76	-1.71	1.34	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.05	.02	.02	.08	*
NAMC → SR (Total Effect)	.05	.02	.02	.08	*
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-1.16	.87	-2.90	.59	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
NAMC → SR (Direct Effect)	.04	.02	.003	.07	*
NAMC → SR (Total Effect)	.04	.02	.0004	.07	*
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.45	.65	-1.77	.86	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.02	.01	-.01	.04	
NAMC → SR (Total Effect)	.02	.01	-.01	.04	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	.01	.01	-.01	.03	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.01	.01	-.01	.03	
NAMC → SR (Total Effect)	.01	.01	-.01	.03	
Expectancy during CS-					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.55	.59	-2.74	-.37	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.00	.01	-.02	.02	
NAMC → SR (Total Effect)	.00	.01	-.03	.02	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-1.32	.40	-2.13	-.51	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.00	.01	-.01	.02	
NAMC → SR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.73	.80	-2.33	.86	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.02	.00	
NAMC → SR (Direct Effect)	.00	.02	-.03	.03	
NAMC → SR (Total Effect)	.00	.02	-.03	.03	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-2.37	.54	-3.45	-1.28	*
NAMC →Discrimination → SR (Indirect Effect)	-.01	.01	-.02	.01	
NAMC → SR (Direct Effect)	.00	.01	-.02	.02	

NAMC → SR (Total Effect)	.00	.01	-.03	.02	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-1.12	.44	-2.00	-.23	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.01	.01	-.01	.03	
NAMC → SR (Total Effect)	.01	.01	-.01	.02	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.07	.36	-1.79	-.35	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.00	.01	-.01	.02	
NAMC → SR (Total Effect)	.00	.01	-.01	.02	

Table 58. Positive Acquisition Mood Change (PAMC) and Extinction Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.01	
Extinction Heart Rate during CS+					
Discrimination → Extinction (b path)	-1.07	.36	-1.79	-.35	*
PAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00	
PAMC → Extinction (Direct Effect)	.00	.01	-.01	.02	
PAMC → Extinction (Total Effect)	.00	.01	-.01	.02	
Extinction Heart Rate during CS-					
Discrimination → Extinction (b path)	.12	.75	-1.37	1.61	
PAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PAMC → Extinction (Direct Effect)	.00	.00	.00	.00	
PAMC → Extinction (Total Effect)	.00	.00	.00	.00	

Table 59. Positive Acquisition Mood Change (PAMC) and Context Renewal Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.00	
Heart Rate during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	.30	.76	-1.22	1.82	
PAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	

PAMC → CR (Direct Effect)	.00	.00	.00	.00	
PAMC → CR (Total Effect)	.00	.00	.00	.00	
All Context Renewal Trials					
Discrimination → CR (b path)	1.20	1.10	-1.00	3.40	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.00	
PAMC → CR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 1					
Discrimination → CR (b path)	.49	1.06	-1.64	2.61	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.00	
PAMC → CR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 2					
Discrimination → CR (b path)	-.67	1.03	-2.73	1.40	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.00	
PAMC → CR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 3					
Discrimination → CR (b path)	3.06	1.24	.57	5.55	*
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.00	
PAMC → CR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 4					
Discrimination → CR (b path)	.32	1.13	-1.95	2.60	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.00	
PAMC → CR (Total Effect)	.00	.00	-.01	.00	
<u>Heart Rate during CS-</u>					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	-.77	1.02	-2.83	1.29	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.00	
PAMC → CR (Total Effect)	.00	.00	-.01	.00	
All Context Renewal Trials					
Discrimination → CR (b path)	.40	1.04	-1.67	2.48	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	.00	.00	
PAMC → CR (Total Effect)	.00	.00	.00	.00	
Context Renewal Trial 1					
Discrimination → CR (b path)	.13	1.08	-2.04	2.30	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
PAMC → CR (Direct Effect)	.00	.00	-.01	.00	
PAMC → CR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 2					
Discrimination → CR (b path)	.29	1.09	-1.90	2.48	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	

PAMC → CR (Direct Effect)	.00	.00	.00	.00
PAMC → CR (Total Effect)	.00	.00	.00	.00
Context Renewal Trial 3				
Discrimination → CR (b path)	.52	1.02	-1.52	2.57
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
PAMC → CR (Direct Effect)	.00	.00	.00	.00
PAMC → CR (Total Effect)	.00	.00	.00	.00
Context Renewal Trial 4				
Discrimination → CR (b path)	-1.10	1.17	-3.46	1.25
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
PAMC → CR (Direct Effect)	.00	.00	-.01	.00
PAMC → CR (Total Effect)	.00	.00	-.01	.00

Table 60. Positive Acquisition Mood Change (PAMC) and Spontaneous Recovery Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.00	
Heart Rate during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.21	1.06	-2.34	1.93	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PAMC → SR (Direct Effect)	.00	.00	-.01	.00	
PAMC → SR (Total Effect)	.00	.00	-.01	.00	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.47	1.07	-2.61	1.68	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PAMC → SR (Direct Effect)	.00	.00	-.01	.00	
PAMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	.23	1.09	-1.95	2.41	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PAMC → SR (Direct Effect)	.00	.00	-.01	.00	
PAMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.64	1.07	-2.79	1.51	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
PAMC → SR (Direct Effect)	.00	.00	-.01	.00	
PAMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.61	1.09	-2.80	1.59	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	

PAMC → SR (Direct Effect)	.00	.00	-.01	.00
PAMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 4				
Discrimination → SR (b path)	-.84	1.12	-3.08	1.40
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PAMC → SR (Direct Effect)	.00	.00	-.01	.00
PAMC → SR (Total Effect)	.00	.00	-.01	.00
Heart Rate during CS-				
First 2 Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.64	1.01	-2.66	1.38
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PAMC → SR (Direct Effect)	.00	.00	-.01	.00
PAMC → SR (Total Effect)	.00	.00	-.01	.00
All Spontaneous Recovery Trials				
Discrimination → SR (b path)	-.37	1.03	-2.44	1.70
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PAMC → SR (Direct Effect)	.00	.00	-.01	.00
PAMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 1				
Discrimination → SR (b path)	-.63	.96	-2.55	1.28
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PAMC → SR (Direct Effect)	.00	.00	-.01	.00
PAMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 2				
Discrimination → SR (b path)	-.64	1.08	-2.82	1.54
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PAMC → SR (Direct Effect)	.00	.00	-.01	.00
PAMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 3				
Discrimination → SR (b path)	.35	1.23	-2.11	2.81
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PAMC → SR (Direct Effect)	.00	.00	-.01	.00
PAMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 4				
Discrimination → SR (b path)	-.56	1.02	-2.60	1.48
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
PAMC → SR (Direct Effect)	.00	.00	.00	.00
PAMC → SR (Total Effect)	.00	.00	.00	.00

Table 61. Negative Acquisition Mood Change (NAMC) and Extinction Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	

Extinction Heart Rate during CS+				
Discrimination → Extinction (b path)	.03	.70	-1.37	1.44
NAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00
NAMC → Extinction (Direct Effect)	.00	.0	.00	.01
P=NAMC → Extinction (Total Effect)	.00	.00	.00	.01
Extinction Heart Rate during CS-				
Discrimination → Extinction (b path)	.26	.73	-1.19	1.72
NAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00
NAMC → Extinction (Direct Effect)	.00	.00	.00	.00
NAMC → Extinction (Total Effect)	.00	.00	.00	.00

Table 62. Negative Acquisition Mood Change (NAMC) and Context Renewal Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	
Heart Rate during CS+					
First 2 Context Renewal Trials					
Discrimination → CR (b path)	1.14	1.09	-1.06	3.34	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	.01	.00	
NAMC → CR (Total Effect)	.00	.00	.01	.00	
All Context Renewal Trials					
Discrimination → CR (b path)	.42	1.06	-1.70	2.55	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	-.01	.00	
NAMC → CR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 1					
Discrimination → CR (b path)	-.72	1.02	-2.77	1.33	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	-.01	.00	
NAMC → CR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 2					
Discrimination → CR (b path)	3.00	1.24	.51	5.48	*
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	
NAMC → CR (Direct Effect)	.00	.00	-.01	.00	
NAMC → CR (Total Effect)	.00	.00	-.01	.00	
Context Renewal Trial 3					
Discrimination → CR (b path)	.27	1.13	-1.99	2.53	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00	

NAMC → CR (Direct Effect)	.00	.00	-.01	.00
NAMC → CR (Total Effect)	.00	.00	-.01	.00
Context Renewal Trial 4				
Discrimination → CR (b path)	-.85	1.03	-2.92	1.22
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
NAMC → CR (Direct Effect)	.00	.00	-.01	.00
NAMC → CR (Total Effect)	.00	.00	-.01	.00
Heart Rate during CS-				
First 2 Context Renewal Trials				
Discrimination → CR (b path)	.38	1.02	-1.67	2.42
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
NAMC → CR (Direct Effect)	.00	.00	-.01	.00
NAMC → CR (Total Effect)	.00	.00	-.01	.00
All Context Renewal Trials				
Discrimination → CR (b path)	.07	1.08	-2.09	2.24
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
NAMC → CR (Direct Effect)	.00	.00	-.01	.00
NAMC → CR (Total Effect)	.00	.00	-.01	.00
Context Renewal Trial 1				
Discrimination → CR (b path)	.27	1.07	-1.88	2.42
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
NAMC → CR (Direct Effect)	.00	.00	-.01	.00
NAMC → CR (Total Effect)	.00	.00	-.01	.00
Context Renewal Trial 2				
Discrimination → CR (b path)	.49	1.01	-1.53	2.51
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
NAMC → CR (Direct Effect)	.00	.00	-.01	.00
NAMC → CR (Total Effect)	.00	.00	-.01	.00
Context Renewal Trial 3				
Discrimination → CR (b path)	-1.22	1.20	-3.63	1.18
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
NAMC → CR (Direct Effect)	.00	.00	-.01	.00
NAMC → CR (Total Effect)	.00	.00	-.01	.00
Context Renewal Trial 4				
Discrimination → CR (b path)	.77	1.29	-1.81	3.34
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.00
NAMC → CR (Direct Effect)	.00	.00	-.01	.00
NAMC → CR (Total Effect)	.00	.00	-.01	.00

Table 63. Negative Acquisition Mood Change (NAMC) and Spontaneous Recovery Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	
Heart Rate during CS+					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.36	1.07	-2.51	1.79	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.00	
NAMC → SR (Total Effect)	.00	.00	-.01	.00	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.61	1.07	-2.76	1.54	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.00	
NAMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	.06	1.09	-2.14	2.25	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.00	
NAMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 2					
Discrimination → SR (b path)	-.78	1.08	-2.94	1.39	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.00	
NAMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 3					
Discrimination → SR (b path)	-.73	1.08	-2.90	1.44	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.00	
NAMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 4					
Discrimination → SR (b path)	-1.00	1.11	-3.23	1.24	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.00	
NAMC → SR (Total Effect)	.00	.00	-.01	.00	
Heart Rate during CS-					
First 2 Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.77	1.01	-2.79	1.24	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.00	
NAMC → SR (Total Effect)	.00	.00	-.01	.00	
All Spontaneous Recovery Trials					
Discrimination → SR (b path)	-.47	1.03	-2.54	1.59	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	.00	.00	-.01	.00	
NAMC → SR (Total Effect)	.00	.00	-.01	.00	
Spontaneous Recovery Trial 1					
Discrimination → SR (b path)	-.77	.95	-2.68	1.14	

NAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NAMC → SR (Direct Effect)	.00	.00	-.01	.00
NAMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 2				
Discrimination → SR (b path)	-.78	1.09	-2.96	1.40
NAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NAMC → SR (Direct Effect)	.00	.00	-.01	.00
NAMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 3				
Discrimination → SR (b path)	.29	1.22	-2.17	2.74
NAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NAMC → SR (Direct Effect)	.00	.00	-.01	.00
NAMC → SR (Total Effect)	.00	.00	-.01	.00
Spontaneous Recovery Trial 4				
Discrimination → SR (b path)	-.63	1.01	-2.67	1.41
NAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.00
NAMC → SR (Direct Effect)	.00	.00	.00	.00
NAMC → SR (Total Effect)	.00	.00	.00	.00

Table 64. Positive Acquisition Mood Change (PAMC) and Extinction Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Fear Ratings for CS+					
Discrimination → Extinction (b path)	-1.80	1.21	-4.21	.60	
PAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.01	
PAMC → Extinction (Direct Effect)	-.01	.01	-.04	.02	
PAMC → Extinction (Total Effect)	-.01	.01	-.04	.02	
Extinction Fear Ratings for CS-					
Discrimination → Extinction (b path)	-5.32	.92	-7.15	-3.49	*
PAMC → Discrimination → Extinction (Indirect Effect)	.00	.01	-.01	.02	
PAMC → Extinction (Direct Effect)	-.01	.01	-.03	.01	
PAMC → Extinction (Total Effect)	-.01	.01	-.03	.02	

Table 65. Positive Acquisition Mood Change (PAMC) and Return of Fear Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.00	
Fear Ratings for CS+					

Context Renewal					
Discrimination → CR (b path)	-.12	1.32	-2.75	2.52	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	.01	.02	-.03	.04	
PAMC → CR (Total Effect)	.01	.02	-.03	.04	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.90	1.34	-4.59	.78	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	.00	.02	-.03	.04	
PAMC → SR (Total Effect)	.00	.02	-.03	.04	
Fear Ratings for CS-					
Context Renewal					
Discrimination → CR (b path)	-2.39	1.12	-4.62	-.16	*
PAMC → Discrimination → CR (Indirect Effect)	.00	.01	-.01	.02	
PAMC → CR (Direct Effect)	.00	.02	-.03	.03	
PAMC → CR (Total Effect)	.01	.02	-.03	.04	
Spontaneous Recovery					
Discrimination → SR (b path)	-3.93	.96	-5.84	-2.01	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.01	-.01	.02	
PAMC → SR (Direct Effect)	.01	.01	-.01	.04	
PAMC → SR (Total Effect)	.02	.01	-.01	.05	

Table 66. Negative Acquisition Mood Change (NAMC) and Extinction Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Fear Ratings for CS+					
Discrimination → Extinction (b path)	-1.87	1.20	-4.25	.51	
NAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00	
NAMC → Extinction (Direct Effect)	.02	.01	-.01	.05	
NAMC → Extinction (Total Effect)	.02	.01	-.01	.05	
Extinction Fear Ratings for CS-					
Discrimination → Extinction (b path)	-5.34	.92	-7.17	-3.51	*
NAMC → Discrimination → Extinction (Indirect Effect)	.00	.01	-.02	.01	
NAMC → Extinction (Direct Effect)	.00	.01	-.02	.03	
NAMC → Extinction (Total Effect)	.00	.01	-.02	.03	

Table 67. Negative Acquisition Mood Change (NAMC) and Return of Fear Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	
Fear Ratings for CS+					
Context Renewal					
Discrimination → CR (b path)	-.12	1.32	-2.77	2.52	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	.00	.02	-.04	.03	
NAMC → CR (Total Effect)	.00	.02	-.04	.03	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.96	1.35	-4.65	.72	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.01	.02	-.03	.04	
NAMC → SR (Total Effect)	.01	.02	-.03	.04	
Fear Ratings for CS-					
Context Renewal					
Discrimination → CR (b path)	-2.35	1.12	-4.59	-.12	*
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	-.01	.01	-.04	.02	
NAMC → CR (Total Effect)	-.01	.01	-.04	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-3.85	.95	-5.74	-1.96	*
NAMC →Discrimination → SR (Indirect Effect)	.00	.01	-.02	.01	
NAMC → SR (Direct Effect)	-.02	.01	-.05	.00	
NAMC → SR (Total Effect)	-.02	.01	-.05	.00	

Table 68. Positive Acquisition Mood Change (PAMC) and Extinction Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Valence Ratings for CS+					
Discrimination → Extinction (b path)	.39	.70	-1.01	1.79	
PAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.00	
PAMC → Extinction (Direct Effect)	.00	.01	-.02	.01	
PAMC → Extinction (Total Effect)	.00	.01	-.02	.01	
Extinction Valence Ratings for CS-					
Discrimination → Extinction (b path)	-1.73	.64	-3.01	-.45	*
PAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.02	
PAMC → Extinction (Direct Effect)	.00	.01	-.01	.02	
PAMC → Extinction (Total Effect)	.00	.01	-.01	.02	

Table 69. Positive Acquisition Mood Change (PAMC) and Return of Fear Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.00	
Valence Ratings for CS+					
Context Renewal					
Discrimination → CR (b path)	1.44	.69	.07	2.81	*
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	-.01	.01	-.02	.01	
PAMC → CR (Total Effect)	-.01	.01	-.02	.01	
Spontaneous Recovery					
Discrimination → SR (b path)	-.30	.77	-1.83	1.24	
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PAMC → SR (Direct Effect)	.00	.01	-.01	.02	
PAMC → SR (Total Effect)	.00	.01	-.01	.02	
Valence Ratings for CS-					
Context Renewal					
Discrimination → CR (b path)	-.31	.59	-1.50	.87	
PAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
PAMC → CR (Direct Effect)	.01	.01	-.01	.02	
PAMC → CR (Total Effect)	.01	.01	-.01	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.39	.61	-2.61	-.18	*
PAMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
PAMC → SR (Direct Effect)	-.01	.01	-.02	.01	
PAMC → SR (Total Effect)	-.01	.01	-.02	.01	

Table 70. Negative Acquisition Mood Change (NAMC) and Extinction Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Valence Ratings for CS+					
Discrimination → Extinction (b path)	.23	.71	-1.19	1.64	
NAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.00	
NAMC → Extinction (Direct Effect)	-.01	.01	-.03	.01	

NAMC → Extinction (Total Effect)	-.01	.01	-.03	.01	
Extinction Valence Ratings for CS-					
Discrimination → Extinction (b path)	-1.72	.66	-3.03	-.42	*
NAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	.00	.01	
NAMC → Extinction (Direct Effect)	.00	.01	-.01	.01	
NAMC → Extinction (Total Effect)	.00	.01	-01	.02	

Table 71. Negative Acquisition Mood Change (NAMC) and Return of Fear Valence Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	-.01	.00	
Valence Ratings for CS+					
Context Renewal					
Discrimination → CR (b path)	1.26	.72	-.18	2.71	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	-.02	.00	
NAMC → CR (Direct Effect)	.00	.01	-.02	.01	
NAMC → CR (Total Effect)	-.01	.01	-.02	.01	
Spontaneous Recovery					
Discrimination → SR (b path)	-.46	.80	-2.07	1.14	
NAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.00	
NAMC → SR (Direct Effect)	-.01	.01	-.03	.01	
NAMC → SR (Total Effect)	-.01	.01	-.02	.01	
Valence Ratings for CS-					
Context Renewal					
Discrimination → CR (b path)	-.55	.62	-1.78	.69	
NAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
NAMC → CR (Direct Effect)	-.01	.01	-.03	.00	
NAMC → CR (Total Effect)	-.01	.01	-.02	.00	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.32	.64	-2.60	-.04	*
NAMC →Discrimination → SR (Indirect Effect)	.01	.00	.00	.02	
NAMC → SR (Direct Effect)	-.01	.01	-.01	.02	
NAMC → SR (Total Effect)	.01	.01	.00	.02	

Table 72. Positive Acquisition Mood Change (PAMC) and Extinction Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Arousal Ratings for CS+					
Discrimination → Extinction (b path)	-2.80	1.11	-5.01	-.58	*
PAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.01	
PAMC → Extinction (Direct Effect)	.00	.01	-.02	.02	
PAMC → Extinction (Total Effect)	.00	.01	-.03	.02	
Extinction Arousal Ratings for CS-					
Discrimination → Extinction (b path)	-4.08	1.00	-6.06	-2.09	*
PAMC →Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.01	
PAMC → Extinction (Direct Effect)	-.01	.01	-.03	.01	
PAMC → Extinction (Total Effect)	-.01	.01	-.03	.01	

Table 73. Positive Acquisition Mood Change (PAMC) and Return of Fear Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
PAMC → Discrimination (a path)	.00	.00	.00	.00	
Arousal Ratings for CS+					
Context Renewal					
Discrimination → CR (b path)	-.77	.99	-2.74	1.21	
PAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	.01	.01	-.02	.03	
PAMC → CR (Total Effect)	.01	.01	-.02	.03	
Spontaneous Recovery					
Discrimination → SR (b path)	-.57	1.27	-3.11	1.98	
PAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	.00	.02	-.03	.03	
PAMC → SR (Total Effect)	.00	.02	-.03	.03	
Arousal Ratings for CS-					
Context Renewal					
Discrimination → CR (b path)	-1.46	1.07	-3.60	.69	
PAMC →Discrimination → CR (Indirect Effect)	.00	.00	.00	.01	
PAMC → CR (Direct Effect)	.00	.01	-.03	.03	
PAMC → CR (Total Effect)	.00	.01	-.03	.03	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.19	1.29	-3.77	1.39	
PAMC →Discrimination → SR (Indirect Effect)	.00	.00	.00	.01	
PAMC → SR (Direct Effect)	-.01	.02	-.04	.03	
PAMC → SR (Total Effect)	-.01	.03	-.04	.03	

Table 74. Negative Acquisition Mood Change (NAMC) and Extinction Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	
Extinction Arousal Ratings for CS+					
Discrimination → Extinction (b path)	.02	.01	-.01	.04	
NAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.01	
NAMC → Extinction (Direct Effect)	.02	.01	-.01	.04	
NAMC → Extinction (Total Effect)	.02	.01	-.01	.04	
Extinction Arousal Ratings for CS-					
Discrimination → Extinction (b path)	-4.10	1.00	-6.09	-2.12	*
NAMC → Discrimination → Extinction (Indirect Effect)	.00	.00	-.01	.01	
NAMC → Extinction (Direct Effect)	.01	.01	-.01	.03	
NAMC → Extinction (Total Effect)	.01	.01	-.01	.03	

Table 75. Negative Acquisition Mood Change (NAMC) and Return of Fear Arousal Ratings

	b	SE	LLCI	ULCI	sig
A Path					
NAMC → Discrimination (a path)	.00	.00	.00	.00	
Arousal Ratings for CS+					
Context Renewal					
Discrimination → CR (b path)	.00	.01	-.02	.02	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	.00	.01	-.02	.02	
NAMC → CR (Total Effect)	.00	.01	-.02	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-.58	1.26	-3.10	1.95	
NAMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.01	.01	-.02	.04	
NAMC → SR (Total Effect)	.01	.01	-.02	.04	
Arousal Ratings for CS-					
Context Renewal					
Discrimination → CR (b path)	-1.44	1.07	-3.57	.70	
NAMC → Discrimination → CR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → CR (Direct Effect)	-.01	.01	-.03	.02	
NAMC → CR (Total Effect)	-.01	.01	-.03	.02	
Spontaneous Recovery					
Discrimination → SR (b path)	-1.17	1.28	-3.74	1.39	
NAMC → Discrimination → SR (Indirect Effect)	.00	.00	-.01	.00	
NAMC → SR (Direct Effect)	.01	.02	-.02	.04	

NAMC → SR (Total Effect)	.01	.02	-.02	.04

Appendix B: Study 3 Tables

Table 1: Left Insula Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.51	.79	-1.08	2.09	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.01	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	-.24	1.30	-2.84	2.35	
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.14	.37	-.88	.60	

Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Fear → Recall (Direct)	.00	.01	-.01	.01
Fear → Recall (Total)	.00	.01	-.01	.01
Recall				
Discrimination → Recall (b path)	.52	.93	-1.34	2.38
Fear → Discrimination → Recall (Indirect)	.00	.00	.00	.01
Fear → Recall (Direct)	.00	.01	-.03	.05
Fear → Recall (Total)	.00	.01	-.03	.03

Table 2: Right Insula Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.02	.83	-1.67	1.63	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	-.27	1.28	-2.83	2.28	
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.23	.40	-1.02	.56	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.01	.01	
Fear → Recall (Total)	.00	.01	-.01	.01	
Recall					
Discrimination → Recall (b path)	-.24	.91	-2.06	1.58	
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	.00	.01	-.03	.03	
Fear → Recall (Total)	.00	.01	-.03	.03	

Table 3: dACC Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.21	.73	-1.25	1.67	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.01	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					

Discrimination → Recall (b path)	.75	1.16	-1.57	3.07
Fear →Discrimination → Recall (Indirect)	.00	.00	.00	.02
Fear → Recall (Direct)	-.01	.03	-.05	.03
Fear → Recall (Total)	-.01	.02	-.05	.03
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.03	.34	-.71	.65
Fear →Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Fear → Recall (Direct)	.00	.01	-.01	.01
Fear → Recall (Total)	.00	.01	-.01	.01
Recall				
Discrimination → Recall (b path)	.40	-.84	-1.28	2.07
Fear →Discrimination → Recall (Indirect)	.00	.00	-.01	.01
Fear → Recall (Direct)	.00	.01	-.03	.03
Fear → Recall (Total)	.00	.01	-.03	.03

Table 4: Left Hippocampus CS->CS+ Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	-.01	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.46	1.07	-1.67	2.59	
Fear →Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	.05	1.70	-3.34	3.44	
Fear →Discrimination → Recall (Indirect)	.00	.00	-.01	.01	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.11	.53	-.96	1.17	
Fear →Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.01	.01	
Fear → Recall (Total)	.00	.01	-.01	.01	
Recall					
Discrimination → Recall (b path)	.61	1.21	-1.80	3.02	
Fear →Discrimination → Recall (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	.00	.01	-.03	.03	
Fear → Recall (Total)	.00	.01	-.03	.03	

Table 5: Right Hippocampus CS->CS+ Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					

Fear → Discrimination (a path)	.00	.00	-.01	.00
SCR during CS+				
End of Extinction				
Discrimination → Extinction (b path)	-.34	1.22	-2.77	2.09
Fear →Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Fear → Recall (Direct)	.00	.01	-.02	.03
Fear → Recall (Total)	.00	.01	-.02	.03
Recall				
Discrimination → Recall (b path)	-1.00	1.84	-4.69	2.68
Fear →Discrimination → Recall (Indirect)	.00	.01	.00	.02
Fear → Recall (Direct)	-.01	.02	-.05	.03
Fear → Recall (Total)	-.01	.02	-.05	.03
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.10	.57	-1.03	1.23
Fear →Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Fear → Recall (Direct)	.00	.01	-.01	.01
Fear → Recall (Total)	.00	.01	-.01	.01
Recall				
Discrimination → Recall (b path)	-.09	1.32	-2.73	2.56
Fear →Discrimination → Recall (Indirect)	.00	.00	.00	.01
Fear → Recall (Direct)	.00	.01	-.03	.03
Fear → Recall (Total)	.00	.01	-.03	.03

Table 6: 5mm vmPFC CS->CS+ Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.11	.47	-1.06	.84	
Fear →Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	1.81	.74	.34	3.28	*
Fear →Discrimination → Recall (Indirect)	.00	.01	-.01	.02	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.19	.23	-.65	.28	
Fear →Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.01	.01	
Fear → Recall (Total)	.00	.01	-.01	.01	
Recall					

Discrimination → Recall (b path)	1.18	.55	.08	2.28	*
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.01	
Fear → Recall (Direct)	.00	.01	-.03	.02	
Fear → Recall (Total)	.00	.01	-.03	.03	

Table 7: 10mm vmPFC CS->CS+ Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	-.01	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	26.10	34.84	-43.46	95.66	
Fear → Discrimination → Extinction (Indirect)	-.02	.10	-.40	.08	
Fear → Recall (Direct)	-.99	.71	-2.41	.42	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-3.90	16.80	-37.43	29.64	
Fear → Discrimination → Recall (Indirect)	.00	.05	-.15	.07	
Fear → Recall (Direct)	.20	.38	-.55	.96	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	9.21	25.79	-42.28	60.69	
Fear → Discrimination → Extinction (Indirect)	-.01	.06	-.23	.05	
Fear → Recall (Direct)	-.36	.52	-1.39	.67	
Fear → Recall (Total)	-.27	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	-.90	21.02	-42.84	41.05	
Fear → Discrimination → Recall (Indirect)	.00	.06	-.16	.11	
Fear → Recall (Direct)	-.82	.47	-1.76	.12	
Fear → Recall (Total)	-.82	.47	-1.76	.11	

Table 8: Left Insula Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-28.20	43.19	-114.43	58.03	
Fear → Discrimination → Extinction (Indirect)	-.05	.12	-.54	.08	
Fear → Recall (Direct)	-.97	.71	-2.39	.45	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	4.74	20.74	-36.65	46.13	
Fear → Discrimination → Recall (Indirect)	.01	.06	-.06	.20	
Fear → Recall (Direct)	.19	.38	-.57	.95	

Fear → Recall (Total)	.20	.37	-.55	.95
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-3.58	31.45	-66.37	59.21
Fear →Discrimination → Extinction (Indirect)	.00	.07	-.20	.10
Fear → Recall (Direct)	-.37	.52	-1.40	.66
Fear → Recall (Total)	-.37	.51	-1.40	.65
Recall				
Discrimination → Recall (b path)	22.37	25.79	-29.10	73.85
Fear →Discrimination → Recall (Indirect)	.04	.09	-.05	.36
Fear → Recall (Direct)	-.86	.47	-1.80	.08
Fear → Recall (Total)	-.82	.47	-1.76	.11

Table 9: Right Insula Discrimination and Heart Rate

	b	SE	LLCI	ULCI	Sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-57.27	45.79	-148.70	34.16	
Fear →Discrimination → Extinction (Indirect)	-.09	.15	-.64	.08	
Fear → Recall (Direct)	-.93	.70	-2.34	.48	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	5.16	22.02	-38.80	49.12	
Fear →Discrimination → Recall (Indirect)	.01	.06	-.06	.21	
Fear → Recall (Direct)	.19	.38	-.56	.95	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-13.57	34.01	-81.47	54.32	
Fear →Discrimination → Extinction (Indirect)	-.01	.08	-.31	.07	
Fear → Recall (Direct)	-.36	.52	-1.39	.67	
Fear → Recall (Total)	-.37	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	42.28	27.06	-11.73	96.29	
Fear →Discrimination → Recall (Indirect)	.06	.10	-.08	.37	
Fear → Recall (Direct)	-.88	.46	-1.81	.05	
Fear → Recall (Total)	-.82	.47	-1.76	.11	

Table 10: dACC Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	5.05	37.70	-70.21	80.31	

Fear → Discrimination → Extinction (Indirect)	.02	.18	-.28	.46
Fear → Recall (Direct)	-1.04	.73	-2.49	.41
Fear → Recall (Total)	-1.02	.70	-2.42	.39
Recall				
Discrimination → Recall (b path)	-8.69	18.88	-46.37	29.00
Fear → Discrimination → Recall (Indirect)	-.04	.10	-.33	.09
Fear → Recall (Direct)	.24	.39	-.53	1.01
Fear → Recall (Total)	.20	.37	-.55	.95
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	48.20	26.92	-5.54	101.94
Fear → Discrimination → Extinction (Indirect)	.16	.14	-.01	.58
Fear → Recall (Direct)	-.54	.51	-1.56	.49
Fear → Recall (Total)	-.37	.51	-1.40	.65
Recall				
Discrimination → Recall (b path)	3.35	23.64	-43.84	50.53
Fear → Discrimination → Recall (Indirect)	.01	.10	-.17	.24
Fear → Recall (Direct)	-.84	.48	-1.80	.13
Fear → Recall (Total)	-.82	.47	-1.76	.11

Table 11: Left Hippocampus CS->CS+ Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	-.01	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	69.93	59.72	-49.32	189.17	
Fear → Discrimination → Extinction (Indirect)	-.23	.34	-1.31	.13	
Fear → Recall (Direct)	-.78	.73	-2.24	.67	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-52.80	31.30	-115.28	9.68	
Fear → Discrimination → Recall (Indirect)	.15	.16	-.05	.61	
Fear → Recall (Direct)	.05	.38	-.71	.81	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-10.04	43.63	-97.16	77.07	
Fear → Discrimination → Extinction (Indirect)	.03	.15	-.21	.43	
Fear → Recall (Direct)	-.41	.53	-1.47	.66	
Fear → Recall (Total)	-.37	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	-36.74	39.71	-116.00	42.52	
Fear → Discrimination → Recall (Indirect)	.10	.11	-.05	.39	
Fear → Recall (Direct)	-.93	.48	-1.89	.04	
Fear → Recall (Total)	-.82	.47	-1.76	.11	

Table 12: Right Hippocampus CS->CS+ Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	-.01	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	119.53	67.73	-15.70	254.76	
Fear →Discrimination → Extinction (Indirect)	-.34	.31	-1.23	.07	
Fear → Recall (Direct)	-.68	.72	-2.12	.75	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-39.00	32.86	-104.59	26.58	
Fear →Discrimination → Recall (Indirect)	.06	.08	-.05	.32	
Fear → Recall (Direct)	.14	.38	-.61	.89	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	47.32	50.10	-52.70	147.35	
Fear →Discrimination → Extinction (Indirect)	-.12	.14	-.52	.08	
Fear → Recall (Direct)	-.25	.53	-1.31	.81	
Fear → Recall (Total)	-.37	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	-27.06	41.38	-109.66	55.53	
Fear →Discrimination → Recall (Indirect)	.04	.09	-.06	.33	
Fear → Recall (Direct)	-.86	.47	-1.81	.08	
Fear → Recall (Total)	-.82	.47	-1.76	.11	

Table 13: 5mm vmPFC CS->CS+ Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	22.46	25.64	-28.72	73.65	
Fear →Discrimination → Extinction (Indirect)	-.02	.10	-.34	.11	
Fear → Recall (Direct)	-1.00	.71	-2.41	.41	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-4.49	12.59	-29.63	20.65	
Fear →Discrimination → Recall (Indirect)	-.01	.05	-.17	.07	
Fear → Recall (Direct)	.20	.38	-.55	.96	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	20.08	19.03	-.17.92	58.08	
Fear →Discrimination → Extinction (Indirect)	-.04	.08	-.29	.05	
Fear → Recall (Direct)	-.34	.51	-1.36	.69	

Fear → Recall (Total)	-.37	.51	-1.40	.65
Recall				
Discrimination → Recall (b path)	-2.46	15.76	-33.91	29.00
Fear →Discrimination → Recall (Indirect)	.00	.06	-.16	.09
Fear → Recall (Direct)	-.82	.47	-1.76	.12
Fear → Recall (Total)	-.82	.47	-1.76	.11

Table 14: 10mm vmPFC CS->CS+ Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	-.01	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	26.10	34.84	-43.46	95.66	
Fear →Discrimination → Extinction (Indirect)	-.02	.10	-.40	.08	
Fear → Recall (Direct)	-.99	.71	-2.41	.42	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-3.90	16.80	-37.43	29.64	
Fear →Discrimination → Recall (Indirect)	.00	.06	-.16	.07	
Fear → Recall (Direct)	.20	.38	-.55	.96	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	9.21	25.79	-42.28	60.69	
Fear →Discrimination → Extinction (Indirect)	-.01	.06	-.23	.05	
Fear → Recall (Direct)	-.36	.52	-1.39	.67	
Fear → Recall (Total)	-.37	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	-.90	21.02	-42.84	41.05	
Fear →Discrimination → Recall (Indirect)	.00	.06	-.16	.12	
Fear → Recall (Direct)	-.82	.47	-1.76	.12	
Fear → Recall (Total)	-.82	.47	-1.76	.11	

Table 15: Left Insula Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	Sig
A Path					
Fear → Discrimination (a path)	.05	.09	-.11	.22	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.01	.02	-.02	.04	
Fear →Discrimination → Extinction (Indirect)	.00	.00	.00	.01	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					

Discrimination → Recall (b path)	-.01	.03	-.06	.05
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.00
Fear → Recall (Direct)	-.01	.02	-.05	.03
Fear → Recall (Total)	-.01	.02	-.05	.03
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.00	.01	-.02	.01
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Fear → Recall (Direct)	.00	.01	-.01	.01
Fear → Recall (Total)	.00	.01	-.01	.01
Recall				
Discrimination → Recall (b path)	.01	.01	-.03	.05
Fear → Discrimination → Recall (Indirect)	.00	.00	.00	.01
Fear → Recall (Direct)	.00	.01	-.03	.03
Fear → Recall (Total)	.00	.01	-.03	.03

Table 16: Right Insula Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.09	.08	-.07	.26	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.00	.02	-.04	.03	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	.00	.03	-.06	.05	
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.01	.01	-.02	.01	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.01	.01	
Fear → Recall (Total)	.00	.01	-.01	.01	
Recall					
Discrimination → Recall (b path)	.00	.02	-.04	.04	
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	.00	.01	-.03	.03	
Fear → Recall (Total)	.00	.01	-.03	.03	

Table 17: dACC Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig

A Path				
Fear → Discrimination (a path)	.19	.10	-.00	.38
SCR during CS+				
End of Extinction				
Discrimination → Extinction (b path)	.00	.02	-.03	.03
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.01
Fear → Recall (Direct)	.00	.01	-.02	.03
Fear → Recall (Total)	.00	.01	-.02	.03
Recall				
Discrimination → Recall (b path)	.02	.02	-.03	.06
Fear → Discrimination → Recall (Indirect)	.00	.00	.00	.02
Fear → Recall (Direct)	-.01	.02	-.05	.03
Fear → Recall (Total)	-.01	.02	-.05	.03
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.00	.01	-.02	.01
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Fear → Recall (Direct)	.00	.01	-.01	.01
Fear → Recall (Total)	.00	.01	-.01	.01
Recall				
Discrimination → Recall (b path)	.01	.02	-.03	.04
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.01
Fear → Recall (Direct)	.00	.01	-.03	.03
Fear → Recall (Total)	.00	.01	-.03	.03

Table 18: Left Hippocampus Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.11	.06	-.23	.02	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.01	.02	-.04	.05	
Fear → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	.00	.04	-.07	.08	
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.01	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.00	.01	-.02	.03	
Fear → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	.00	.01	-.01	.01	
Fear → Recall (Total)	.00	.01	-.01	.01	
Recall					

Discrimination → Recall (b path)	.02	.03	-.03	.07	
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.00	
Fear → Recall (Direct)	.00	.01	-.03	.03	
Fear → Recall (Total)	.00	.01	-.03	.03	

Table 19: Right Hippocampus Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.12	.06	-.22	-.01	*
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.01	.03	-.06	.04	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	-.02	.04	-.10	.07	
Fear → Discrimination → Recall (Indirect)	.00	.01	.00	.02	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.00	.01	-.02	.03	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.01	.01	
Fear → Recall (Total)	.00	.01	-.01	.01	
Recall					
Discrimination → Recall (b path)	.00	.03	-.05	.06	
Fear → Discrimination → Recall (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.03	.03	
Fear → Recall (Total)	.00	.01	-.03	.03	

Table 20: 5mm vmPFC Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.05	.12	-.29	.19	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.00	.01	-.03	.02	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	.04	.02	.01	.08	*
Fear → Discrimination → Recall (Indirect)	.00	.01	-.01	.01	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	

SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.00	.01	-.02	.01
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Fear → Recall (Direct)	.00	.01	-.01	.01
Fear → Recall (Total)	.00	.01	-.01	.01
Recall				
Discrimination → Recall (b path)	.03	.01	.00	.06
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.00
Fear → Recall (Direct)	.00	.01	-.03	.03
Fear → Recall (Total)	.00	.01	-.03	.03

Table 21: 10mm vmPFC Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.09	-.18	.18	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.01	.02	-.04	.03	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.02	.03	
Fear → Recall (Total)	.00	.01	-.02	.03	
Recall					
Discrimination → Recall (b path)	.06	.03	.01	.11	*
Fear → Discrimination → Recall (Indirect)	.00	.01	-.01	.01	
Fear → Recall (Direct)	-.01	.02	-.05	.03	
Fear → Recall (Total)	-.01	.02	-.05	.03	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.00	.01	-.02	.01	
Fear → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Fear → Recall (Direct)	.00	.01	-.01	.01	
Fear → Recall (Total)	.00	.01	-.01	.01	
Recall					
Discrimination → Recall (b path)	.04	.02	.004	.08	*
Fear → Discrimination → Recall (Indirect)	.00	.00	-.01	.01	
Fear → Recall (Direct)	.00	.01	-.03	.02	
Fear → Recall (Total)	.00	.01	-.03	.03	

Table 22: Left Insula Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.07	.09	-.12	.25	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.68	.93	-2.54	1.18	

Fear → Discrimination → Extinction (Indirect)	-.05	.13	-.54	.08
Fear → Recall (Direct)	-.97	.71	-2.39	.45
Fear → Recall (Total)	-1.02	.70	-2.42	.39
Recall				
Discrimination → Recall (b path)	.09	.44	-.79	.98
Fear → Discrimination → Recall (Indirect)	.01	.06	-.07	.19
Fear → Recall (Direct)	.19	.38	-.57	.95
Fear → Recall (Total)	.20	.37	-.55	.95
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.06	.68	-1.42	1.29
Fear → Discrimination → Extinction (Indirect)	.00	.07	-.18	.11
Fear → Recall (Direct)	-.37	.52	-1.40	.66
Fear → Recall (Total)	-.37	.51	-1.40	.65
Recall				
Discrimination → Recall (b path)	.44	.55	-.67	1.54
Fear → Discrimination → Recall (Indirect)	.03	.08	-.05	.34
Fear → Recall (Direct)	-.86	.47	-1.80	.08
Fear → Recall (Total)	-.82	.47	-1.76	.11

Table 23: Right Insula Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.07	.09	-.10	.25	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-1.38	.97	-3.32	.56	
Fear → Discrimination → Extinction (Indirect)	.10	.17	-.71	.08	
Fear → Recall (Direct)	-.02	.70	-2.32	.48	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	.04	.47	-.90	.97	
Fear → Discrimination → Recall (Indirect)	.00	.06	-.09	.17	
Fear → Recall (Direct)	.20	.38	-.56	.95	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.12	.72	-1.56	1.33	
Fear → Discrimination → Extinction (Indirect)	-.01	.07	-.24	.10	
Fear → Recall (Direct)	-.37	.52	-1.40	.66	
Fear → Recall (Total)	-.37	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	.79	.58	-.36	1.95	
Fear → Discrimination → Recall (Indirect)	.06	.10	-.06	.37	
Fear → Recall (Direct)	-.88	.47	-1.82	.05	
Fear → Recall (Total)	-.82	.47	-1.76	.11	

Table 24: dACC Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.17	.11	-.04	.39	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.24	.81	-1.37	1.86	
Fear →Discrimination → Extinction (Indirect)	.04	.19	-.25	.57	
Fear → Recall (Direct)	-1.06	.72	-2.50	.38	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-.12	.42	-.95	.72	
Fear →Discrimination → Recall (Indirect)	-.02	.10	-.31	.11	
Fear → Recall (Direct)	.22	.39	-.55	.99	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	1.08	.58	-.07	2.23	
Fear →Discrimination → Extinction (Indirect)	.16	.15	-.02	.59	
Fear → Recall (Direct)	-.53	.51	-1.55	.49	
Fear → Recall (Total)	-.37	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	.07	.52	-.97	1.11	
Fear →Discrimination → Recall (Indirect)	.01	.10	-.18	.24	
Fear → Recall (Direct)	-.84	.48	-1.80	.13	
Fear → Recall (Total)	-.82	.47	-1.76	.11	

Table 25: Left Hippocampus Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.17	.06	-.30	-.04	*
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	1.63	1.33	-1.02	4.28	
Fear →Discrimination → Extinction (Indirect)	-.28	.38	-1.44	.16	
Fear → Recall (Direct)	-.74	.74	-2.21	.73	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-1.12	.67	-2.46	.23	
Fear →Discrimination → Recall (Indirect)	.14	.15	-.05	.59	
Fear → Recall (Direct)	.05	.38	-.71	.81	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.42	.97	-2.36	1.51	
Fear →Discrimination → Extinction (Indirect)	.07	.17	-.20	.52	
Fear → Recall (Direct)	-.44	.54	-1.52	.63	

Fear → Recall (Total)	-.37	.51	-1.40	.65
Recall				
Discrimination → Recall (b path)	-.73	.86	-2.44	.98
Fear → Discrimination → Recall (Indirect)	.09	.11	-.06	.39
Fear → Recall (Direct)	-.92	.48	-1.88	.04
Fear → Recall (Total)	-.82	.47	-1.76	.11

Table 26: Right Hippocampus Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.14	.06	-.25	-.02	*
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	2.56	1.45	-.32	5.47	
Fear → Discrimination → Extinction (Indirect)	-.35	.31	-1.26	.07	
Fear → Recall (Direct)	-.67	.72	-2.10	.77	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-.83	.70	-2.22	.56	
Fear → Discrimination → Recall (Indirect)	.06	.08	-.05	.33	
Fear → Recall (Direct)	.14	.38	-.61	.89	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.94	1.07	-1.21	3.08	
Fear → Discrimination → Extinction (Indirect)	-.12	.15	-.52	.09	
Fear → Recall (Direct)	-.25	.53	-1.31	.81	
Fear → Recall (Total)	-.37	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	-.51	.88	-2.26	1.25	
Fear → Discrimination → Recall (Indirect)	.04	.09	-.07	.31	
Fear → Recall (Direct)	-.86	.47	-1.81	.09	
Fear → Recall (Total)	-.82	.47	-1.81	.09	

Table 27: 5mm vmPFC Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.07	.13	-.33	.19	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.62	.66	-.70	1.93	
Fear → Discrimination → Extinction (Indirect)	-.04	.11	-.43	.07	
Fear → Recall (Direct)	-.98	.71	-2.39	.43	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-.12	.32	-.76	.53	
Fear → Discrimination → Recall (Indirect)	.00	.05	-.11	.10	

Fear → Recall (Direct)	-.20	.38	-.55	.95
Fear → Recall (Total)	-.20	.37	-.55	.95
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.45	.49	-.53	1.43
Fear → Discrimination → Extinction (Indirect)	-.05	.08	-.33	.03
Fear → Recall (Direct)	-.33	.52	-1.35	.70
Fear → Recall (Total)	-.37	.51	-1.40	.65
Recall				
Discrimination → Recall (b path)	-.14	.40	-.94	.66
Fear → Discrimination → Recall (Indirect)	.00	.05	-.13	.11
Fear → Recall (Direct)	-.82	.47	-1.76	.12
Fear → Recall (Total)	-.82	.47	-1.76	.11

Table 28: 10mm vmPFC Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.08	.10	-.27	.11	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.73	.90	-1.06	2.53	
Fear → Discrimination → Extinction (Indirect)	-.06	.11	-.49	.06	
Fear → Recall (Direct)	-.96	.71	-2.38	.45	
Fear → Recall (Total)	-1.02	.70	-2.42	.39	
Recall					
Discrimination → Recall (b path)	-.17	.44	-1.04	.70	
Fear → Discrimination → Recall (Indirect)	.00	.05	-.11	.09	
Fear → Recall (Direct)	.20	.38	-.55	.95	
Fear → Recall (Total)	.20	.37	-.55	.95	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.11	.67	-1.22	1.44	
Fear → Discrimination → Extinction (Indirect)	-.01	.07	-.23	.09	
Fear → Recall (Direct)	-.36	.52	-1.40	.67	
Fear → Recall (Total)	-.37	.51	-1.40	.65	
Recall					
Discrimination → Recall (b path)	-.15	.54	-1.23	.94	
Fear → Discrimination → Recall (Indirect)	.00	.05	-.13	.10	
Fear → Recall (Direct)	-.82	.47	-1.76	.12	
Fear → Recall (Total)	-.82	.47	-1.76	.11	

Table 29: Left Insula Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					

End of Extinction				
Discrimination → Extinction (b path)	-1.83	6.97	-15.65	11.99
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.05	.02
Fear → Recall (Direct)	-.11	.11	-.33	.12
Fear → Recall (Total)	-.11	.11	-.33	.12
Recall				
Discrimination → Recall (b path)	-6.39	7.17	-20.61	7.83
Fear → Discrimination → Recall (Indirect)	.00	.02	-.06	.01
Fear → Recall (Direct)	-.10	.12	-.13	.33
Fear → Recall (Total)	.09	.12	-.14	.32
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	9.52	7.22	-4.79	23.84
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.02	.07
Fear → Recall (Direct)	.10	.12	-.13	.33
Fear → Recall (Total)	.11	.12	-.13	.34
Recall				
Discrimination → Recall (b path)	-7.46	7.49	-22.32	7.40
Fear → Discrimination → Recall (Indirect)	-.01	.02	.06	.01
Fear → Recall (Direct)	-.13	.12	-.37	.11
Fear → Recall (Total)	-.14	.12	-.38	.11

Table 30: Right Insula Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-11.35	7.42	-26.07	3.37	
Fear → Discrimination → Extinction (Indirect)	-.01	.02	-.08	.01	
Fear → Recall (Direct)	-.10	.11	-.32	.13	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	-12.45	7.65	-27.63	2.73	
Fear → Discrimination → Recall (Indirect)	-.01	.02	-.10	.01	
Fear → Recall (Direct)	.11	.12	-.12	.33	
Fear → Recall (Total)	.09	.12	-.14	.32	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	9.67	7.78	-5.76	25.11	
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.01	.08	
Fear → Recall (Direct)	.10	.12	-.14	.33	
Fear → Recall (Total)	.11	.12	-.13	.34	
Recall					
Discrimination → Recall (b path)	-11.40	8.03	-27.32	4.53	
Fear → Discrimination → Recall (Indirect)	-.01	.02	-.08	.01	
Fear → Recall (Direct)	-.12	.12	-.36	.12	

Fear → Recall (Total)	-.14	.12	-.38	.11	

Table 31: dACC Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	Sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	5.68	5.98	-6.19	17.55	
Fear → Discrimination → Extinction (Indirect)	.02	.03	-.02	.11	
Fear → Recall (Direct)	-.13	.11	-.35	.10	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	-8.39	6.15	-20.59	3.81	
Fear → Discrimination → Recall (Indirect)	-.03	.03	-.11	.00	
Fear → Recall (Direct)	.12	.12	-.11	.36	
Fear → Recall (Total)	.09	.12	-.14	.32	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	11.18	6.18	-1.08	23.43	
Fear → Discrimination → Extinction (Indirect)	.04	.03	.00	.13	
Fear → Recall (Direct)	.06	.12	-.17	.30	
Fear → Recall (Total)	.11	.12	-.13	.34	
Recall					
Discrimination → Recall (b path)	-12.28	6.37	-24.93	.36	
Fear → Discrimination → Recall (Indirect)	-.05	.03	-.14	.00	
Fear → Recall (Direct)	-.09	.12	-.33	.15	
Fear → Recall (Total)	-.14	.12	-.38	.11	

Table 32: Left Hippocampus Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	Sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.75	8.86	-16.84	18.33	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.04	.02	
Fear → Recall (Direct)	-.11	.11	-.33	.12	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	3.42	9.15	-14.73	21.57	
Fear → Discrimination → Recall (Indirect)	-.01	.02	-.06	.02	
Fear → Recall (Direct)	.10	.12	-.13	.33	
Fear → Recall (Total)	.09	.12	-.14	.43	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-5.99	9.24	-24.32	12.34	

Fear → Discrimination → Extinction (Indirect)	.01	.02	-.01	.08
Fear → Recall (Direct)	.10	.12	-.14	.33
Fear → Recall (Total)	-.11	.12	-.13	.34
Recall				
Discrimination → Recall (b path)	-4.94	9.56	-23.91	14.03
Fear → Discrimination → Recall (Indirect)	.01	.02	-.02	.08
Fear → Recall (Direct)	-.14	.12	-.39	.10
Fear → Recall (Total)	-.14	.12	-.38	.11

Table 33: Right Hippocampus Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	1.18	9.30	-17.28	19.65	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.04	.02	
Fear → Recall (Direct)	-.11	.11	-.33	.12	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	-1.26	9.61	-20.33	17.81	
Fear → Discrimination → Recall (Indirect)	.00	.02	-.02	.05	
Fear → Recall (Direct)	.09	.12	-.14	.32	
Fear → Recall (Total)	.09	.12	-.14	.33	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-8.19	9.69	-27.40	11.03	
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.01	.08	
Fear → Recall (Direct)	.10	.12	-.14	.33	
Fear → Recall (Total)	.11	.12	-.13	.34	
Recall					
Discrimination → Recall (b path)	-2.05	10.05	-21.99	17.89	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.02	.05	
Fear → Recall (Direct)	-.14	.12	-.38	.11	
Fear → Recall (Total)	-.14	.12	-.38	.11	

Table 34: 5mm vmPFC Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	Sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-1.36	4.12	-9.55	6.82	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.03	.02	
Fear → Recall (Direct)	-.11	.11	-.33	.12	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					

Discrimination → Recall (b path)	-8.11	4.18	-16.41	.18
Fear → Discrimination → Recall (Indirect)	.00	.02	-.07	.03
Fear → Recall (Direct)	.10	.11	-.13	.32
Fear → Recall (Total)	.09	.12	-.14	.32
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.15	4.31	-8.40	8.70
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.02	.03
Fear → Recall (Direct)	.11	.12	-.13	.34
Fear → Recall (Total)	.11	.12	-.13	.34
Recall				
Discrimination → Recall (b path)	-7.04	4.40	-15.77	1.69
Fear → Discrimination → Recall (Indirect)	.00	.02	-.06	.03
Fear → Recall (Direct)	-.13	.12	-.37	.11
Fear → Recall (Total)	-.14	.12	-.38	.11

Table 35: Left Insula Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	Sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	2.91	5.19	-7.38	13.21	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.01	.04	
Fear → Recall (Direct)	-.04	.08	-.21	.13	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	-2.10	5.35	-12.71	8.50	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.04	.01	
Fear → Recall (Direct)	.01	.09	-.16	.18	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	9.48	5.59	-1.61	20.57	
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.02	.06	
Fear → Recall (Direct)	.08	.09	-.10	.26	
Fear → Recall (Total)	.09	.09	-.09	.27	
Recall					
Discrimination → Recall (b path)	-5.66	5.37	-16.31	4.98	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.05	.01	
Fear → Recall (Direct)	-.07	.09	-.24	.10	
Fear → Recall (Total)	-.07	.09	-.25	.10	

Table 36: Right Insula Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	

SCR during CS+				
End of Extinction				
Discrimination → Extinction (b path)	-4.06	5.58	-15.14	7.02
Fear →Discrimination → Extinction (Indirect)	.00	.01	-.05	.01
Fear → Recall (Direct)	-.03	.08	-.20	.13
Fear → Recall (Total)	-.04	.09	-.20	.13
Recall				
Discrimination → Recall (b path)	-7.05	5.72	-18.40	4.30
Fear →Discrimination → Recall (Indirect)	-.01	.01	-.06	.01
Fear → Recall (Direct)	-.02	.09	-.15	.19
Fear → Recall (Total)	.01	.09	-.16	.18
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	10.58	6.01	-1.35	22.51
Fear →Discrimination → Extinction (Indirect)	.01	.02	-.01	.07
Fear → Recall (Direct)	.08	.09	-.10	.26
Fear → Recall (Total)	.09	.09	-.09	.27
Recall				
Discrimination → Recall (b path)	-7.57	5.76	-19.00	3.87
Fear →Discrimination → Recall (Indirect)	-.01	.01	-.06	.01
Fear → Recall (Direct)	-.07	.09	-.24	.11
Fear → Recall (Total)	-.07	.09	-.25	.10

Table 37: dACC Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	5.72	4.45	-3.10	14.54	
Fear →Discrimination → Extinction (Indirect)	.02	.02	-.01	.09	
Fear → Recall (Direct)	-.06	.09	-.23	.11	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	-5.22	4.58	-14.32	3.87	
Fear →Discrimination → Recall (Indirect)	-.02	.02	-.07	.01	
Fear → Recall (Direct)	.03	.09	-.14	.20	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	8.61	4.81	-.94	18.16	
Fear →Discrimination → Extinction (Indirect)	.03	.03	.00	.11	
Fear → Recall (Direct)	.06	.09	-.12	.24	
Fear → Recall (Total)	.09	.09	-.09	.27	
Recall					
Discrimination → Recall (b path)	-9.43	4.56	-18.48	-.39	*
Fear →Discrimination → Recall (Indirect)	-.03	.02	-.10	.00	

Fear → Recall (Direct)	-.04	.09	-.21	.13
Fear → Recall (Total)	-.07	.09	-.25	.10

Table 38: Left Hippocampus Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-3.47	6.60	-16.57	9.62	
Fear →Discrimination → Extinction (Indirect)	.01	.01	-.01	.05	
Fear → Recall (Direct)	-.04	.08	-.21	.13	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	1.59	6.80	-11.90	15.09	
Fear →Discrimination → Recall (Indirect)	.00	.01	-.04	.02	
Fear → Recall (Direct)	.01	.09	-.16	.19	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-5.89	7.19	-20.15	8.37	
Fear →Discrimination → Extinction (Indirect)	.01	.02	-.01	.07	
Fear → Recall (Direct)	.08	.09	-.10	.26	
Fear → Recall (Total)	.09	.09	-.09	.27	
Recall					
Discrimination → Recall (b path)	-2.63	6.86	-16.24	10.98	
Fear →Discrimination → Recall (Indirect)	.00	.02	-.02	.06	
Fear → Recall (Direct)	-.08	.09	-.25	.10	
Fear → Recall (Total)	-.07	.09	-.25	.10	

Table 39: Right Hippocampus Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	Sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-3.91	6.93	-17.66	9.84	
Fear →Discrimination → Extinction (Indirect)	.00	.01	-.01	.04	
Fear → Recall (Direct)	-.04	.08	-.21	.13	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	-1.71	7.14	-15.89	12.46	
Fear →Discrimination → Recall (Indirect)	.00	.01	-.01	.04	
Fear → Recall (Direct)	.01	.09	-.16	.18	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					

Discrimination → Extinction (b path)	-8.29	7.53	-23.22	6.64
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.01	.07
Fear → Recall (Direct)	.08	.09	-.10	.26
Fear → Recall (Total)	.09	.09	-.09	.27
Recall				
Discrimination → Recall (b path)	.89	7.21	-13.40	15.19
Fear → Discrimination → Recall (Indirect)	.00	.01	-.03	.02
Fear → Recall (Direct)	-.07	.09	-.25	.10
Fear → Recall (Total)	-.07	.09	-.25	.10

Table 40: 10mm vmPFC Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	Sig
A Path					
Fear → Discrimination (a path)	.00	.00	.00	.00	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-5.59	4.13	-13.79	2.60	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.04	.01	
Fear → Recall (Direct)	-.03	.08	-.20	.13	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	-8.56	4.20	-16.90	-22.42	*
Fear → Discrimination → Recall (Indirect)	-.01	.02	-.06	.02	
Fear → Recall (Direct)	.02	.08	-.15	.18	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-1.21	4.54	-10.23	7.80	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.03	.01	
Fear → Recall (Direct)	.09	.09	-.09	.27	
Fear → Recall (Total)	.09	.09	-.09	.27	
Recall					
Discrimination → Recall (b path)	-4.70	4.30	-13.23	3.84	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.05	.01	
Fear → Recall (Direct)	-.07	.09	-.24	.10	
Fear → Recall (Total)	-.07	.09	-.25	.10	

Table 41: Left Insula Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.03	.07	-.11	.18	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.03	.15	-.33	.27	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.04	.02	
Fear → Recall (Direct)	-.11	.11	-.33	.12	

Fear → Recall (Total)	-.11	.11	-.33	.12
Recall				
Discrimination → Recall (b path)	-.14	.15	-.45	.17
Fear →Discrimination → Recall (Indirect)	.00	.02	-.06	.01
Fear → Recall (Direct)	.10	.12	-.13	.33
Fear → Recall (Total)	.09	.12	-.14	.32
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.19	.16	-.12	.50
Fear →Discrimination → Extinction (Indirect)	.01	.02	-.02	.07
Fear → Recall (Direct)	.10	.12	-.13	.33
Fear → Recall (Total)	.11	.12	-.13	.34
Recall				
Discrimination → Recall (b path)	-.16	.16	-.48	.16
Fear →Discrimination → Recall (Indirect)	-.01	.02	-.06	.01
Fear → Recall (Direct)	-.13	.12	-.37	.11
Fear → Recall (Total)	-.14	.12	-.38	.11

Table 42: Right Insula Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.06	.07	-.08	.20	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.20	.16	-.51	.12	
Fear →Discrimination → Extinction (Indirect)	-.01	.02	-.08	.01	
Fear → Recall (Direct)	-.10	.11	-.32	.13	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	-.30	.16	-.62	.03	
Fear →Discrimination → Recall (Indirect)	-.02	.03	-.10	.01	
Fear → Recall (Direct)	.11	.12	-.12	.34	
Fear → Recall (Total)	.09	.12	-.14	.32	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.16	.17	-.17	.49	
Fear →Discrimination → Extinction (Indirect)	.01	.02	-.01	.08	
Fear → Recall (Direct)	.10	.12	-.14	.33	
Fear → Recall (Total)	.11	.12	-.13	.34	
Recall					
Discrimination → Recall (b path)	-.27	.17	-.61	.07	
Fear →Discrimination → Recall (Indirect)	-.02	.02	-.09	.01	
Fear → Recall (Direct)	-.12	.12	-36	.12	
Fear → Recall (Total)	-.14	12	-.38	.11	

Table 43: dACC Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.17	.09	.001	.34	*
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.15	.13	-.11.	41	
Fear →Discrimination → Extinction (Indirect)	.03	.03	-.01	.12	
Fear → Recall (Direct)	-.13	.11	-.36	.09	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	-.13	.13	-.39	.14	
Fear →Discrimination → Recall (Indirect)	-.02	.03	-.09	.01	
Fear → Recall (Direct)	.11	.12	-.12	.35	
Fear → Recall (Total)	.09	.12	-.14	.32	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.23	.13	-.04	.49	
Fear →Discrimination → Extinction (Indirect)	.04	.03	.00	.13	
Fear → Recall (Direct)	.07	.12	-.17	.30	
Fear → Recall (Total)	.11	.12	-.13	.34	
Recall					
Discrimination → Recall (b path)	-.21	.14	-.49	.06	
Fear →Discrimination → Recall (Indirect)	-.04	.03	-.13	.00	
Fear → Recall (Direct)	-.10	.12	-.34	.15	
Fear → Recall (Total)	-.14	.12	-.38	.11	

Table 44: Left Hippocampus Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.08	.06	-.19	.04	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.01	.20	-.38	.40	
Fear →Discrimination → Extinction (Indirect)	.00	.01	-.04	.03	
Fear → Recall (Direct)	-.11	.11	-.33	.12	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	.09	.20	-.31	.49	
Fear →Discrimination → Recall (Indirect)	-.01	.02	-.06	.02	
Fear → Recall (Direct)	.10	.12	-.13	.33	
Fear → Recall (Total)	.09	.12	-.14	.32	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.13	.20	-.53	.28	
Fear →Discrimination → Extinction (Indirect)	.01	.02	-.01	.08	
Fear → Recall (Direct)	.10	.12	-.14	.33	
Fear → Recall (Total)	.11	.12	-.13	.34	

Recall				
Discrimination → Recall (b path)	-.07	.21	-.49	.35
Fear → Discrimination → Recall (Indirect)	.01	.02	-.02	.07
Fear → Recall (Direct)	-.14	.12	-.38	.10
Fear → Recall (Total)	-.14	.12	-.38	.11

Table 45: Right Hippocampus Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.05	.06	-.16	.06	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.02	.20	-.39	.42	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.04	.02	
Fear → Recall (Direct)	-.11	.11	-.33	.12	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	-.06	.21	-.48	.36	
Fear → Discrimination → Recall (Indirect)	.00	.02	-.02	.05	
Fear → Recall (Direct)	.09	.12	-.14	.32	
Fear → Recall (Total)	.09	.12	-.14	.32	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.19	.21	-.61	.23	
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.01	.08	
Fear → Recall (Direct)	.10	.12	-.14	.33	
Fear → Recall (Total)	.11	.12	-.13	.34	
Recall					
Discrimination → Recall (b path)	-.04	.22	-.48	.39	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.02	.05	
Fear → Recall (Direct)	-.14	.12	-.38	.11	
Fear → Recall (Total)	-.14	.12	-.38	.11	

Table 46: 5mm vmPFC Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.01	.11	-.22	.20	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.05	.11	-.26	.16	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.02	.03	
Fear → Recall (Direct)	-.11	.11	-.33	.12	
Fear → Recall (Total)	-.11	.11	-.33	.12	
Recall					
Discrimination → Recall (b path)	-.21	.11	-.42	.00	
Fear → Discrimination → Recall (Indirect)	.00	.02	-.05	.04	
Fear → Recall (Direct)	.09	.11	-.13	.32	

Fear → Recall (Total)	.09	.12	-.14	.32
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.01	.11	-.23	.21
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.02	.03
Fear → Recall (Direct)	.11	.12	-.13	.34
Fear → Recall (Total)	.11	.12	-.13	.34
Recall				
Discrimination → Recall (b path)	-.18	.11	-.40	.05
Fear → Discrimination → Recall (Indirect)	.00	.02	-.04	.05
Fear → Recall (Direct)	-.14	.12	-.38	.10
Fear → Recall (Total)	-.14	.12	-.38	.11

Table 47: Left Insula Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.03	.07	-.11	.18	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.06	.11	-.16	.29	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.01	.04	
Fear → Recall (Direct)	-.04	.08	-.21	.13	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	-.04	.12	-.27	.19	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.03	.01	
Fear → Recall (Direct)	.01	.09	-.16	.18	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.19	.12	-.05	.43	
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.02	.06	
Fear → Recall (Direct)	.08	.09	-.10	.26	
Fear → Recall (Total)	.09	.09	-.09	.27	
Recall					
Discrimination → Recall (b path)	-.11	.12	-.34	.12	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.04	.01	
Fear → Recall (Direct)	-.07	.09	-.24	.10	
Fear → Recall (Total)	-.07	.09	-.25	.10	

Table 48: Right Insula Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.06	.07	-.08	.20	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.05	.12	-.29	.19	

Fear → Discrimination → Extinction (Indirect)	.00	.01	-.04	.01
Fear → Recall (Direct)	-.03	.08	-.20	.13
Fear → Recall (Total)	-.04	.08	-.20	.13
Recall				
Discrimination → Recall (b path)	-.17	.12	-.41	.08
Fear → Discrimination → Recall (Indirect)	-.01	.02	-.07	.01
Fear → Recall (Direct)	.02	.09	-.15	.19
Fear → Recall (Total)	.01	.09	-.16	.18
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.19	.13	-.07	.44
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.01	.07
Fear → Recall (Direct)	.08	.09	-.10	.26
Fear → Recall (Total)	.09	.09	-.09	.27
Recall				
Discrimination → Recall (b path)	-.17	.12	-.42	.07
Fear → Discrimination → Recall (Indirect)	-.01	.02	-.06	.01
Fear → Recall (Direct)	-.06	.09	-.24	.11
Fear → Recall (Total)	-.08	.09	-.25	.10

Table 49: dACC Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.17	.09	.001	.34	*
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.13	.10	-.06	.33	
Fear → Discrimination → Extinction (Indirect)	.02	.02	-.01	.10	
Fear → Recall (Direct)	-.06	.09	-.23	.11	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	-.07	.10	-.27	.13	
Fear → Discrimination → Recall (Indirect)	-.01	.02	-.06	.01	
Fear → Recall (Direct)	.02	.09	-.15	.20	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.18	.10	-.03	.39	
Fear → Discrimination → Extinction (Indirect)	.03	.02	.00	.10	
Fear → Recall (Direct)	.06	.09	-.12	.24	
Fear → Recall (Total)	.09	.09	-.09	.27	
Recall					
Discrimination → Recall (b path)	-.17	.10	-.37	.03	
Fear → Discrimination → Recall (Indirect)	-.03	.02	-.09	.00	
Fear → Recall (Direct)	-.04	.09	-.22	.13	
Fear → Recall (Total)	-.07	.09	-.25	.10	

Table 50: Left Hippocampus Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.08	.06	-.19	.04	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.08	.15	-.37	.21	
Fear → Discrimination → Extinction (Indirect)	.01	.01	-.01	.05	
Fear → Recall (Direct)	-.04	.08	-.21	.13	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	.04	.15	-.25	.34	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.04	.02	
Fear → Recall (Direct)	.01	.09	-.16	.19	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.13	.16	-.44	.19	
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.01	.07	
Fear → Recall (Direct)	.08	.09	-.10	.26	
Fear → Recall (Total)	.09	.09	-.10	.26	
Recall					
Discrimination → Recall (b path)	-.04	.15	-.34	.26	
Fear → Discrimination → Recall (Indirect)	.00	.02	-.02	.05	
Fear → Recall (Direct)	-.08	.09	-.25	.10	
Fear → Recall (Total)	-.07	.09	-.25	.10	

Table 51: Right Hippocampus Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	-.05	.06	-.16	.06	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.09	.15	-.39	.22	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.01	.04	
Fear → Recall (Direct)	-.04	.08	-.21	.13	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	-.06	.16	-.37	.25	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.01	.04	
Fear → Recall (Direct)	.01	.09	-.17	.18	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.19	.16	-.52	.14	
Fear → Discrimination → Extinction (Indirect)	.01	.02	-.01	.07	
Fear → Recall (Direct)	.08	.09	-.10	.26	

Fear → Recall (Total)	.09	.09	-.09	.27	
Recall					
Discrimination → Recall (b path)	.02	.16	-.29	.33	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.03	.02	
Fear → Recall (Direct)	-.07	.09	-.25	.10	
Fear → Recall (Total)	-.07	.09	-.25	.10	

Table 52: 10mm vmPFC Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Fear → Discrimination (a path)	.00	.08	-.16	.15	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.14	.11	-.35	.07	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.02	.03	
Fear → Recall (Direct)	-.04	.08	-.20	.13	
Fear → Recall (Total)	-.04	.08	-.20	.13	
Recall					
Discrimination → Recall (b path)	-.24	.11	-.45	-.03	*
Fear → Discrimination → Recall (Indirect)	.00	.02	-.04	.04	
Fear → Recall (Direct)	.01	.09	-.16	.18	
Fear → Recall (Total)	.01	.09	-.16	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.05	.12	-.28	.18	
Fear → Discrimination → Extinction (Indirect)	.00	.01	-.02	.02	
Fear → Recall (Direct)	.09	.09	-.09	.27	
Fear → Recall (Total)	.09	.09	-.09	.27	
Recall					
Discrimination → Recall (b path)	-14	.11	-.36	.08	
Fear → Discrimination → Recall (Indirect)	.00	.01	-.02	.03	
Fear → Recall (Direct)	-.07	.09	-.15	.10	
Fear → Recall (Total)	-.08	.09	-.25	.10	

Appendix C: Study 3 Supplementary Mediation Analyses with MASQ-Anxious Arousal

Table 1: Left Insula Discrimination, and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.50	.81	-1.12	2.12	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.02	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	.07	1.24	-2.42	2.56	
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.01	
Anx → Recall (Direct)	-.01	.04	-.10	.07	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.18	.38	-.93	.57	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	.78	.88	-.98	2.53	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.00	
Anx → Recall (Direct)	.01	.03	-.05	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 2: Right Insula Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.01	.84	-1.69	1.68	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	.22	1.22	-2.23	2.67	
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.01	

Anx → Recall (Direct)	-.01	.04	-.10	.07
Anx → Recall (Total)	-.01	.04	-.09	.07
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.28	.40	-1.08	.52
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Anx → Recall (Direct)	.00	.01	-.03	.03
Anx → Recall (Total)	.00	.01	-.03	.03
Recall				
Discrimination → Recall (b path)	.15	.86	-1.57	1.88
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.01
Anx → Recall (Direct)	.00	.03	-.05	.06
Anx → Recall (Total)	.00	.03	-.05	.06

Table 3: dACC Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.23	.72	-1.21	1.68	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	.67	1.07	-1.47	2.81	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.01	
Anx → Recall (Direct)	-.01	.04	-.09	.07	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.07	.34	-.74	.60	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	.41	.76	-1.11	1.93	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.01	
Anx → Recall (Direct)	.01	.03	-.05	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 4: Left Hippocampus CS->CS+ Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					

Discrimination → Extinction (b path)	.00	.03	-.06	.05
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.01
Anx → Recall (Direct)	.00	.03	-.06	.05
Anx → Recall (Total)	.00	.03	-.06	.05
Recall				
Discrimination → Recall (b path)	-.52	1.61	-3.73	2.70
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.01
Anx → Recall (Direct)	-.01	.04	-.10	.07
Anx → Recall (Total)	-.01	.04	-.09	.07
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.19	.54	-.88	1.26
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.01
Anx → Recall (Direct)	.00	.01	-.03	.03
Anx → Recall (Total)	.00	.01	-.03	.03
Recall				
Discrimination → Recall (b path)	.12	1.14	-2.15	2.39
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.00
Anx → Recall (Direct)	.01	.03	-.05	.06
Anx → Recall (Total)	.00	.03	-.05	.06

Table 5: Right Hippocampus CS->CS+ Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.37	1.20	-2.78	2.03	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	-.73	1.72	-4.17	2.71	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.03	.00	
Anx → Recall (Direct)	-.01	.04	-.09	.07	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.18	.55	-.93	1.28	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.01	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	-.01	1.23	-2.51	2.37	
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.01	.03	-.05	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 6: 5mm vmPFC CS->CS+ Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.01	-.01	.02	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.11	.49	-1.09	.86	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	1.54	.71	.11	2.97	*
Anx → Discrimination → Recall (Indirect)	.01	.01	-.02	.04	
Anx → Recall (Direct)	-.02	.04	-.10	.06	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.17	.24	-.65	.31	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	.96	.53	-.10	2.03	
Anx → Discrimination → Recall (Indirect)	.01	.01	.00	.03	
Anx → Recall (Direct)	.00	.03	-.06	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 7: 10mm vmPFC CS->CS+ Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.01	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.06	.67	-1.40	1.28	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	2.17	.94	.30	4.04	*
Anx → Discrimination → Recall (Indirect)	.01	.01	-.02	.04	
Anx → Recall (Direct)	-.02	.04	-.10	.06	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.26	.32	-.90	.38	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	

Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	1.47	.68	.11	2.83	*
Anx → Discrimination → Recall (Indirect)	.01	.01	-.01	.03	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 8: Left Insula Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.01	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-27.83	43.73	-115.19	59.54	
Anx → Discrimination → Extinction (Indirect)	.11	.36	-.19	1.59	
Anx → Recall (Direct)	1.70	1.70	-1.90	5.30	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	4.44	20.52	-36.54	45.42	
Anx → Discrimination → Recall (Indirect)	-.01	.10	-.28	.15	
Anx → Recall (Direct)	-1.14	.79	02.73	.44	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-4.38	31.65	-67.59	58.82	
Anx → Discrimination → Extinction (Indirect)	.02	.22	-.29	.72	
Anx → Recall (Direct)	1.41	1.30	-1.19	4.01	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	18.22	26.51	-34.71	71.15	
Anx → Discrimination → Recall (Indirect)	-.03	.15	-.56	.14	
Anx → Recall (Direct)	.00	1.03	-2.05	2.04	
Anx → Recall (Total)	-.03	1.02	-2.07	2.01	

Table 9: Right Insula Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-65.24	46.21	-157.56	27.08	
Anx → Discrimination → Extinction (Indirect)	.07	.37	-.45	1.14	
Anx → Recall (Direct)	1.79	1.77	-1.79	5.28	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	3.72	21.93	-40.07	47.51	

Anx → Discrimination → Recall (Indirect)	-.01	.09	-.25	.13
Anx → Recall (Direct)	-1.14	.79	-2.73	.44
Anx → Recall (Total)	-1.15	.79	-2.72	.42
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-16.75	34.09	-84.83	51.34
Anx → Discrimination → Extinction (Indirect)	.03	.18	-.18	.66
Anx → Recall (Direct)	1.40	1.29	-1.18	3.98
Anx → Recall (Total)	1.43	1.28	-1.13	3.99
Recall				
Discrimination → Recall (b path)	39.53	29.01	-16.39	95.45
Anx → Discrimination → Recall (Indirect)	-.08	.18	-.64	.17
Anx → Recall (Direct)	.05	1.01	-1.98	2.07
Anx → Recall (Total)	-.03	1.02	-2.07	2.01

Table 10: dACC Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.01	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-6.29	37.13	-80.47	67.89	
Anx → Discrimination → Extinction (Indirect)	-.01	.27	-.64	.46	
Anx → Recall (Direct)	1.82	1.80	-1.77	5.40	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-5.04	18.34	-41.66	31.57	
Anx → Discrimination → Recall (Indirect)	-.01	.10	-.30	.14	
Anx → Recall (Direct)	-1.14	.79	-2.73	.44	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	42.57	26.55	-10.45	95.59	
Anx → Discrimination → Extinction (Indirect)	.01	.35	-.62	.81	
Anx → Recall (Direct)	1.42	1.27	-1.12	3.95	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	-5.55	23.77	-53.01	41.92	
Anx → Discrimination → Recall (Indirect)	-.01	.12	-.40	.16	
Anx → Recall (Direct)	-.02	1.03	-2.07	2.03	
Anx → Recall (Total)	-.03	.1.02	-2.07	2.01	

Table 11: Left Hippocampus CS->CS+ Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					

End of Extinction					
Discrimination → Extinction (b path)	95.99	58.09	-20.07	212.04	
Anx → Discrimination → Extinction (Indirect)	-.23	.61	-2.55	.22	
Anx → Recall (Direct)	2.04	1.77	-1.49	5.57	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-51.06	30.48	-111.93	9.80	
Anx → Discrimination → Recall (Indirect)	-.07	.24	-.77	.28	
Anx → Recall (Direct)	-1.08	.78	-2.64	.47	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	5.83	42.45	-78.95	90.61	
Anx → Discrimination → Extinction (Indirect)	-.01	.21	-.62	.33	
Anx → Recall (Direct)	1.44	1.30	-1.15	4.02	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	-21.07	40.25	-101.43	59.29	
Anx → Discrimination → Recall (Indirect)	-.03	.14	-.48	.16	
Anx → Recall (Direct)	.00	1.03	-2.05	2.05	
Anx → Recall (Total)	-.03	1.02	-2.07	2.01	

Table 12: Right Hippocampus CS->CS+ Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	135.29	65.24	4.95	265.62	*
Anx → Discrimination → Extinction (Indirect)	.18	.54	-.54	1.88	
Anx → Recall (Direct)	1.64	1.74	-1.84	5.12	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-31.73	33.23	-98.09	34.62	
Anx → Discrimination → Recall (Indirect)	-.16	.81	-2.60	.62	
Anx → Recall (Direct)	-.99	.81	-2.60	.62	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	50.38	48.39	-46.27	147.02	
Anx → Discrimination → Extinction (Indirect)	.07	.23	-.20	.88	
Anx → Recall (Direct)	1.36	1.28	-1.21	3.92	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	-18.52	43.30	-104.97	67.94	
Anx → Discrimination → Recall (Indirect)	-.09	.29	-.94	.32	
Anx → Recall (Direct)	-.06	1.05	-2.03	2.16	

Anx → Recall (Total)	-.03	1.02	-2.07	2.01

Table 13: 5mm vmPFC CS->CS+ Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.01	-.02	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	27.09	25.96	-24.77	78.95	
Anx → Discrimination → Extinction (Indirect)	-.06	.33	-1.20	.32	
Anx → Recall (Direct)	1.87	1.78	-1.69	5.43	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-1.80	12.66	-27.07	23.47	
Anx → Discrimination → Recall (Indirect)	-.01	.16	-.44	.22	
Anx → Recall (Direct)	-1.14	.80	-2.73	.46	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	23.01	18.95	-14.94	60.85	
Anx → Discrimination → Extinction (Indirect)	-.07	.26	-.91	.22	
Anx → Recall (Direct)	1.50	1.28	-1.06	4.06	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	-4.15	16.39	-36.89	28.58	
Anx → Discrimination → Recall (Indirect)	-.03	.21	-.71	.21	
Anx → Recall (Direct)	.00	1.03	-2.07	2.06	
Anx → Recall (Total)	-.03	1.02	-2.07	2.01	

Table 14: 10mm vmPFC CS->CS+ Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.01	-.02	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	31.16	35.22	-39.21	101.52	
Anx → Discrimination → Extinction (Indirect)	-.09	.35	-1.46	.24	
Anx → Recall (Direct)	1.91	1.79	-1.67	5.48	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-1.19	16.75	-34.63	32.25	
Anx → Discrimination → Recall (Indirect)	.00	.14	-.30	.23	
Anx → Recall (Direct)	-1.15	.80	-2.74	.44	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	14.12	25.78	-37.37	65.61	

Anx → Discrimination → Extinction (Indirect)	-.05	.21	-.82	.15
Anx → Recall (Direct)	1.47	1.29	-1.11	4.05
Anx → Recall (Total)	1.43	1.28	-1.13	3.99
Recall				
Discrimination → Recall (b path)	-3.12	21.70	-46.46	40.21
Anx → Discrimination → Recall (Indirect)	-.01	.19	-.56	.26
Anx → Recall (Direct)	-.02	1.03	-2.08	2.04
Anx → Recall (Total)	-.03	1.02	-2.07	2.01

Table 15: Left Insula Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.09	.20	-.48	.30	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.01	.02	-.02	.04	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.02	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	.00	.03	-.05	.05	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.01	.01	
Anx → Recall (Direct)	-.01	.04	-.10	.07	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.00	.01	-.02	.01	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.01	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	.02	.02	-.02	.06	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.01	
Anx → Recall (Direct)	.01	.03	-.05	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 16: Right Insula Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.02	.19	-.40	.36	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.00	.02	-.04	.04	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					

Discrimination → Recall (b path)	.01	.03	-.04	.06
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.01
Anx → Recall (Direct)	-.01	.04	-.10	.07
Anx → Recall (Total)	-.01	.04	-.09	.07
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.01	.01	-.02	.01
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.00
Anx → Recall (Direct)	.00	.01	-.03	.03
Anx → Recall (Total)	.00	.01	-.03	.03
Recall				
Discrimination → Recall (b path)	.01	.02	-.03	.04
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.01
Anx → Recall (Direct)	.00	.03	-.05	.06
Anx → Recall (Total)	.00	.03	-.05	.06

Table 17: dACC Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.08	.23	-.54	.37	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.00	.02	-.03	.03	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	.01	.02	-.03	.06	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.01	
Anx → Recall (Direct)	-.01	.04	-.09	.07	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.00	.01	-.02	.01	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.00	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	.01	.02	-.02	.04	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.01	
Anx → Recall (Direct)	.01	.03	.05	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 18: Left Hippocampus Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.03	.15	-.26	.32	

SCR during CS+				
End of Extinction				
Discrimination → Extinction (b path)	.01	.02	-.04	.05
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.01
Anx → Recall (Direct)	.00	.03	-.06	.05
Anx → Recall (Total)	.00	.03	-.06	.05
Recall				
Discrimination → Recall (b path)	-.01	.04	-.08	.06
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.01
Anx → Recall (Direct)	-.01	.04	-.10	.07
Anx → Recall (Total)	-.01	.04	-.09	.07
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.01	.01	-.02	.03
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.01
Anx → Recall (Direct)	.00	.01	-.03	.03
Anx → Recall (Total)	.00	.01	-.03	.03
Recall				
Discrimination → Recall (b path)	.01	.02	-.04	.06
Anx → Discrimination → Recall (Indirect)	.00	.00	-.01	.00
Anx → Recall (Direct)	.01	.03	-.05	.06
Anx → Recall (Total)	.00	.03	-.05	.06

Table 19: Right Hippocampus Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.13	.13	-.13	.38	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.01	.03	-.06	.04	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	-.01	.04	-.08	.07	
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.01	
Anx → Recall (Direct)	-.01	.04	-.10	.07	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.01	.01	-.02	.03	
Anx → Discrimination → Extinction (Indirect)	.00	.00	.00	.01	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	.01	.03	-.05	.06	
Anx → Discrimination → Recall (Indirect)	.00	.00	.00	.01	

Anx → Recall (Direct)	.00	.03	-.05	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 20: 5mm vmPFC Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.11	.28	-.45	.66	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.00	.01	-.03	.02	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	.04	.02	.002	.08	*
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.04	
Anx → Recall (Direct)	-.02	.04	-.10	.06	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.00	.01	-.01	.01	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	.02	.01	.00	.05	
Anx → Discrimination → Recall (Indirect)	.01	.01	.00	.03	
Anx → Recall (Direct)	.00	.03	-.06	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 21: 10mm vmPFC Contrasts Discrimination and SCR

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.06	.20	-.34	.47	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.01	.02	-.04	.03	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.03	-.06	.05	
Anx → Recall (Total)	.00	.03	-.06	.05	
Recall					
Discrimination → Recall (b path)	.05	.02	.006	.10	*
Anx → Discrimination → Recall (Indirect)	.00	.01	-.02	.04	
Anx → Recall (Direct)	-.02	.04	-.10	.06	
Anx → Recall (Total)	-.01	.04	-.09	.07	
SCR during CS-					
End of Extinction					

Discrimination → Extinction (b path)	.00	.01	-.02	.01	
Anx → Discrimination → Extinction (Indirect)	.00	.00	-.01	.00	
Anx → Recall (Direct)	.00	.01	-.03	.03	
Anx → Recall (Total)	.00	.01	-.03	.03	
Recall					
Discrimination → Recall (b path)	.04	.02	.001	.07	*
Anx → Discrimination → Recall (Indirect)	.01	.01	-.01	.03	
Anx → Recall (Direct)	.00	.03	-.06	.06	
Anx → Recall (Total)	.00	.03	-.05	.06	

Table 22: Left Insula Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.22	.24	-.69	.25	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.66	.94	-2.55	1.22	
Anx → Discrimination → Extinction (Indirect)	.14	.39	-.20	1.67	
Anx → Recall (Direct)	1.67	1.80	-1.93	5.26	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	.09	.44	-.79	.97	
Anx → Discrimination → Recall (Indirect)	-.01	.10	-.27	.15	
Anx → Recall (Direct)	-1.15	.79	-2.73	.44	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.05	.68	-1.41	1.31	
Anx → Discrimination → Extinction (Indirect)	.01	.24	-.40	.62	
Anx → Recall (Direct)	1.42	1.30	-1.19	4.02	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	.35	.57	-.79	1.48	
Anx → Discrimination → Recall (Indirect)	-.02	.15	-.55	.15	
Anx → Recall (Direct)	-.01	1.03	-2.06	2.04	
Anx → Recall (Total)	-.03	1.02	-2.07	2.01	

Table 23: Right Insula Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.07	.22	-.51	.38	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-1.55	.98	-3.50	.41	
Anx → Discrimination → Extinction (Indirect)	.11	.43	-.47	1.46	
Anx → Recall (Direct)	1.71	1.76	-1.82	5.23	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	

Recall				
Discrimination → Recall (b path)	.02	.47	-.91	.95
Anx → Discrimination → Recall (Indirect)	.00	.09	-.20	.18
Anx → Recall (Direct)	-1.15	.79	-2.74	.44
Anx → Recall (Total)	-1.15	.79	-2.72	.42
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.16	.73	-1.61	1.29
Anx → Discrimination → Extinction (Indirect)	.02	.19	-.25	.59
Anx → Recall (Direct)	1.41	1.30	-1.18	4.00
Anx → Recall (Total)	1.43	1.28	-1.13	3.99
Recall				
Discrimination → Recall (b path)	.72	.60	-.47	1.91
Anx → Discrimination → Recall (Indirect)	-.04	.18	-.56	.22
Anx → Recall (Direct)	.01	1.02	-2.02	2.04
Anx → Recall (Total)	-.03	1.02	-2.07	2.01

Table 24: dACC Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.05	.28	-.51	.61	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.02	.80	-1.58	1.62	
Anx → Discrimination → Extinction (Indirect)	.00	.30	-.57	.68	
Anx → Recall (Direct)	1.81	1.80	-1.78	5.40	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-.03	.40	-.84	.78	
Anx → Discrimination → Recall (Indirect)	.00	.10	-.24	.19	
Anx → Recall (Direct)	-1.15	.79	-2.74	.44	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.96	.57	-.18	2.10	
Anx → Discrimination → Extinction (Indirect)	.01	.35	-.64	.83	
Anx → Recall (Direct)	1.42	1.27	-1.11	3.95	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	-.14	.52	-1.18	.91	
Anx → Discrimination → Recall (Indirect)	-.01	.12	-.41	.14	
Anx → Recall (Direct)	-.02	1.03	-2.07	2.04	
Anx → Recall (Total)	-.03	1.02	-2.07	2.01	

Table 25: Left Hippocampus Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					

Anx → Discrimination (a path)	-.10	.17	-.44	.24
SCR during CS+				
End of Extinction				
Discrimination → Extinction (b path)	2.28	1.27	-.26	4.83
Anx → Discrimination → Extinction (Indirect)	-.23	.61	-2.55	.23
Anx → Recall (Direct)	2.04	1.76	-1.47	5.56
Anx → Recall (Total)	1.81	1.78	-1.75	5.38
Recall				
Discrimination → Recall (b path)	-1.07	.66	-2.38	.25
Anx → Discrimination → Recall (Indirect)	-.08	.24	-.79	.22
Anx → Recall (Direct)	-1.07	.78	-2.62	.49
Anx → Recall (Total)	-1.15	.79	-2.72	.42
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.06	.93	-1.92	1.80
Anx → Discrimination → Extinction (Indirect)	.00	.21	-.34	.60
Anx → Recall (Direct)	1.42	1.30	-1.16	4.01
Anx → Recall (Total)	1.43	1.28	-1.13	3.99
Recall				
Discrimination → Recall (b path)	-.40	.87	-2.14	1.33
Anx → Discrimination → Recall (Indirect)	-.03	.14	-.49	.14
Anx → Recall (Direct)	.00	1.03	-2.05	2.06
Anx → Recall (Total)	-.03	1.02	-2.07	2.01

Table 26: Right Hippocampus Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.07	.15	-.24	.38	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	2.97	1.39	.19	5.76	
Anx → Discrimination → Extinction (Indirect)	.22	.56	-.52	1.90	
Anx → Recall (Direct)	1.60	1.74	-1.88	5.07	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-.66	.71	-2.07	.75	
Anx → Discrimination → Recall (Indirect)	-.17	.29	-.99	.14	
Anx → Recall (Direct)	-.98	.81	-2.60	.63	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.97	1.04	-1.10	3.04	
Anx → Discrimination → Extinction (Indirect)	.08	.22	-.16	.80	
Anx → Recall (Direct)	1.35	1.29	-1.22	3.92	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	-.33	.92	-2.17	1.51	

Anx → Discrimination → Recall (Indirect)	-.08	.30	-.92	.36
Anx → Recall (Direct)	.05	1.05	-2.05	2.16
Anx → Recall (Total)	-.03	1.02	-2.07	2.01

Table 27: 5mm vmPFC Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.11	.33	-.77	.55	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.79	.66	-.54	2.11	
Anx → Discrimination → Extinction (Indirect)	-.09	.35	-1.16	.32	
Anx → Recall (Direct)	1.90	1.78	-1.65	5.46	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-.05	.32	-.70	.59	
Anx → Discrimination → Recall (Indirect)	-.01	.16	-.48	.20	
Anx → Recall (Direct)	-1.14	.80	-2.73	.46	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.53	.49	-.45	1.50	
Anx → Discrimination → Extinction (Indirect)	-.08	.25	-.94	.18	
Anx → Recall (Direct)	1.51	1.28	-1.06	4.07	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	-.16	.42	-1.00	.68	
Anx → Discrimination → Recall (Indirect)	-.04	.22	-.81	.19	
Anx → Recall (Direct)	.01	1.03	-2.05	2.08	
Anx → Recall (Total)	-.03	1.02	-2.07	2.01	

Table 28: 10mm vmPFC Contrasts Discrimination and Heart Rate

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.13	.24	-.62	.26	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.94	.90	-.86	2.75	
Anx → Discrimination → Extinction (Indirect)	-.13	.37	-1.57	.23	
Anx → Recall (Direct)	1.94	1.79	-1.63	5.51	
Anx → Recall (Total)	1.81	1.78	-1.75	5.38	
Recall					
Discrimination → Recall (b path)	-.11	.43	-.97	.76	
Anx → Discrimination → Recall (Indirect)	-.02	.16	-.46	.16	
Anx → Recall (Direct)	-1.13	.80	-2.72	.46	
Anx → Recall (Total)	-1.15	.79	-2.72	.42	
SCR during CS-					

End of Extinction					
Discrimination → Extinction (b path)	.25	.66	-1.07	1.57	
Anx → Discrimination → Extinction (Indirect)	-.04	.20	-.75	.18	
Anx → Recall (Direct)	1.47	1.30	-1.12	4.05	
Anx → Recall (Total)	1.43	1.28	-1.13	3.99	
Recall					
Discrimination → Recall (b path)	-.16	.56	-1.29	.96	
Anx → Discrimination → Recall (Indirect)	-.03	.20	-.73	.20	
Anx → Recall (Direct)	.00	1.03	-2.06	2.06	
Anx → Recall (Total)	-.03	1.02	-2.07	2.01	

Table 29: Left Insula Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-1.31	7.05	-15.30	12.68	
Anx → Discrimination → Extinction (Indirect)	.00	.04	-.05	.12	
Anx → Recall (Direct)	.18	.28	-.38	.74	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-6.86	7.23	-21.21	7.49	
Anx → Discrimination → Recall (Indirect)	.01	.04	-.03	.16	
Anx → Recall (Direct)	-.35	.29	-.92	.22	
Anx → Recall (Total)	-.34	.29	-.91	.23	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	9.58	7.34	-4.98	24.14	
Anx → Discrimination → Extinction (Indirect)	-.02	.05	-.19	.04	
Anx → Recall (Direct)	.01	.29	-.57	.59	
Anx → Recall (Total)	-.01	.29	-.59	.57	
Recall					
Discrimination → Recall (b path)	-7.21	7.47	-22.04	7.61	
Anx → Discrimination → Recall (Indirect)	.01	.04	-.03	.16	
Anx → Recall (Direct)	.27	.30	-.32	.86	
Anx → Recall (Total)	.29	.30	-.30	.88	

Table 30: Right Insula Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-11.19	7.52	-26.11	3.73	
Anx → Discrimination → Extinction (Indirect)	.01	.04	-.05	.14	
Anx → Recall (Direct)	.17	.28	-.38	.72	

Anx → Recall (Total)	.18	.28	-.37	.74
Recall				
Discrimination → Recall (b path)	-12.67	7.73	-28.01	2.67
Anx → Discrimination → Recall (Indirect)	.01	.05	-.06	.14
Anx → Recall (Direct)	-.35	.29	-.92	-.21
Anx → Recall (Total)	-.34	.29	-.91	.23
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	9.72	7.92	-6.00	25.44
Anx → Discrimination → Extinction (Indirect)	-.01	.04	-.14	.04
Anx → Recall (Direct)	.00	.29	-.58	.58
Anx → Recall (Total)	-.01	.29	-.59	.57
Recall				
Discrimination → Recall (b path)	-10.50	8.02	-26.42	5.42
Anx → Discrimination → Recall (Indirect)	.01	.04	-.05	.14
Anx → Recall (Direct)	.28	.30	-.31	.86
Anx → Recall (Total)	.29	.30	-.30	.88

Table 31: dACC Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	4.29	5.94	-7.50	16.07	
Anx → Discrimination → Extinction (Indirect)	.01	.04	-.03	.17	
Anx → Recall (Direct)	.17	.28	-.38	.73	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-6.80	6.10	-18.90	5.30	
Anx → Discrimination → Recall (Indirect)	-.02	.04	-.17	.03	
Anx → Recall (Direct)	-.32	.29	-.89	.25	
Anx → Recall (Total)	-.34	.29	-.91	.23	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	11.84	6.13	-.33	24.01	
Anx → Discrimination → Extinction (Indirect)	.03	.07	-.06	.21	
Anx → Recall (Direct)	-.04	.29	-.62	.53	
Anx → Recall (Total)	-.01	.29	-.59	.57	
Recall					
Discrimination → Recall (b path)	-13.59	6.19	-25.86	-1.31	*
Anx → Discrimination → Recall (Indirect)	-.04	.07	-.24	.07	
Anx → Recall (Direct)	.32	.29	-.25	.90	
Anx → Recall (Total)	.29	.30	-.30	.88	

Table 32: Left Hippocampus Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig

A Path				
Anx → Discrimination (a path)	.00	.00	-.01	.01
SCR during CS+				
End of Extinction				
Discrimination → Extinction (b path)	.99	8.92	-16.73	18.70
Anx → Discrimination → Extinction (Indirect)	.00	.02	-.05	.05
Anx → Recall (Direct)	.18	.28	-.37	.74
Anx → Recall (Total)	.18	.28	-.37	.74
Recall				
Discrimination → Recall (b path)	2.83	9.19	-15.42	21.07
Anx → Discrimination → Recall (Indirect)	.00	.03	-.06	.05
Anx → Recall (Direct)	-.34	.29	-.91	.23
Anx → Recall (Total)	-.34	.29	-.91	.23
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-6.39	9.35	-24.93	12.17
Anx → Discrimination → Extinction (Indirect)	.00	.03	-.05	.09
Anx → Recall (Direct)	-.01	.29	-.59	.57
Anx → Recall (Total)	-.01	.29	-.59	.57
Recall				
Discrimination → Recall (b path)	-5.10	9.49	-23.93	13.72
Anx → Discrimination → Recall (Indirect)	.00	.03	-.06	.10
Anx → Recall (Direct)	.29	.30	-.30	.88
Anx → Recall (Total)	.29	.30	-.30	.88

Table 33: Right Hippocampus Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	1.28	9.41	-17.40	19.96	
Anx → Discrimination → Extinction (Indirect)	.01	.03	-.05	.09	
Anx → Recall (Direct)	.18	.28	-.38	.74	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-.54	9.70	-19.79	18.71	
Anx → Discrimination → Recall (Indirect)	.00	.04	-.11	.07	
Anx → Recall (Direct)	-.34	.29	-.92	.24	
Anx → Recall (Total)	-.34	.29	-.91	.23	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-9.02	9.84	-28.54	10.51	
Anx → Discrimination → Extinction (Indirect)	-.04	.05	-.22	.03	
Anx → Recall (Direct)	.02	.30	-.56	.61	
Anx → Recall (Total)	-.01	.29	-.59	.57	
Recall					

Discrimination → Recall (b path)	-2.50	10.02	-22.37	17.38
Anx → Discrimination → Recall (Indirect)	-.01	.04	-.13	.05
Anx → Recall (Direct)	.30	.30	-.30	.89
Anx → Recall (Total)	.29	.30	-.30	.88

Table 34: 5mm vmPFC Discrimination and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.01	-.01	.02	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-1.73	4.18	-10.02	6.55	
Anx → Discrimination → Extinction (Indirect)	.00	.04	-.11	.05	
Anx → Recall (Direct)	.19	.28	-.37	.74	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-7.95	4.23	-16.35	.45	
Anx → Discrimination → Recall (Indirect)	-.01	.07	-.19	.10	
Anx → Recall (Direct)	-.33	.28	-.90	.24	
Anx → Recall (Total)	-.34	.29	-.91	.23	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.49	4.39	-8.22	9.20	
Anx → Discrimination → Extinction (Indirect)	.00	.04	-.08	.08	
Anx → Recall (Direct)	-.01	.29	-.60	.57	
Anx → Recall (Total)	-.01	.29	-.59	.57	
Recall					
Discrimination → Recall (b path)	-8.21	4.37	-16.89	.47	
Anx → Discrimination → Recall (Indirect)	-.01	.07	-.19	.11	
Anx → Recall (Direct)	.30	.29	-.28	.88	
Anx → Recall (Total)	.29	.30	-.30	.88	

Table 35: Left Insula Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	3.22	5.25	-7.21	13.64	
Anx → Discrimination → Extinction (Indirect)	-.01	.03	-.11	.02	
Anx → Recall (Direct)	.07	.21	-.34	.49	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-2.76	5.37	-13.42	7.89	
Anx → Discrimination → Recall (Indirect)	.01	.03	-.02	.11	
Anx → Recall (Direct)	-.24	.21	-.67	.18	
Anx → Recall (Total)	-.24	.21	-.66	.18	

SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	9.31	5.68	-1.96	20.57
Anx → Discrimination → Extinction (Indirect)	-.02	.04	-.15	.04
Anx → Recall (Direct)	-.03	.23	-.48	.42
Anx → Recall (Total)	-.05	.23	-.50	.40
Recall				
Discrimination → Recall (b path)	-5.43	5.36	-16.06	5.19
Anx → Discrimination → Recall (Indirect)	.01	.03	-.02	.13
Anx → Recall (Direct)	.19	.21	-.24	.61
Anx → Recall (Total)	.20	.21	-.23	.62

Table 36: Right Insula Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-3.92	5.66	-15.15	7.32	
Anx → Discrimination → Extinction (Indirect)	.00	.02	-.02	.08	
Anx → Recall (Direct)	.06	.21	-.35	.47	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-7.81	-5.74	-19.20	3.59	
Anx → Discrimination → Recall (Indirect)	.01	.03	-.04	.10	
Anx → Recall (Direct)	-.25	.21	-.67	.17	
Anx → Recall (Total)	-.24	.21	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	10.44	6.11	-1.69	22.58	
Anx → Discrimination → Extinction (Indirect)	-.01	.04	-.13	.05	
Anx → Recall (Direct)	-.04	.23	-.49	.41	
Anx → Recall (Total)	-.05	.23	-.50	.40	
Recall					
Discrimination → Recall (b path)	-6.88	5.76	-18.32	4.56	
Anx → Discrimination → Recall (Indirect)	.01	.03	-.03	.11	
Anx → Recall (Direct)	.19	.21	-.23	.61	
Anx → Recall (Total)	.20	.21	-.23	.62	

Table 37: dACC Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	5.13	4.41	-3.63	13.89	
Anx → Discrimination → Extinction (Indirect)	.01	.03	-.02	.14	

Anx → Recall (Direct)	.05	.21	-.36	.46	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-4.71	4.51	-13.67	4.24	
Anx → Discrimination → Recall (Indirect)	-.01	.03	-.12	.02	
Anx → Recall (Direct)	-.22	.21	-.65	.20	
Anx → Recall (Total)	-.24	.21	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	9.22	4.77	-.24	18.68	
Anx → Discrimination → Extinction (Indirect)	.03	.05	-.05	.17	
Anx → Recall (Direct)	-.08	.22	-.52	.37	
Anx → Recall (Total)	-.05	.23	-.50	.40	
Recall					
Discrimination → Recall (b path)	-10.10	4.43	-18.89	-1.30	*
Anx → Discrimination → Recall (Indirect)	-.03	.05	-.16	.05	
Anx → Recall (Direct)	.22	.21	-.19	.64	
Anx → Recall (Total)	.20	.21	-.23	.62	

Table 38: Left Hippocampus Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	-.01	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-3.50	6.65	-16.71	9.70	
Anx → Discrimination → Extinction (Indirect)	.00	.02	-.03	.06	
Anx → Recall (Direct)	.06	.21	-.35	.48	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	2.12	6.80	-11.38	15.62	
Anx → Discrimination → Recall (Indirect)	.00	.02	-.05	.04	
Anx → Recall (Direct)	-.24	.21	-.66	.19	
Anx → Recall (Total)	-.24	.22	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-6.00	7.26	-20.41	8.40	
Anx → Discrimination → Extinction (Indirect)	.00	.03	-.04	.09	
Anx → Recall (Direct)	-.05	.23	-.50	.40	
Anx → Recall (Total)	-.05	.23	-.50	.40	
Recall					
Discrimination → Recall (b path)	-2.92	6.81	-16.43	10.60	
Anx → Discrimination → Recall (Indirect)	.00	.02	-.04	.06	
Anx → Recall (Direct)	.20	.21	-.23	.62	
Anx → Recall (Total)	.20	.21	-.23	.62	

Table 39: Right Hippocampus Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.00	.00	.01	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-3.92	7.02	-17.84	10.01	
Anx → Discrimination → Extinction (Indirect)	-.02	.03	-.10	.01	
Anx → Recall (Direct)	.08	.21	-.34	.50	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-.75	7.18	-14.99	13.50	
Anx → Discrimination → Recall (Indirect)	.00	.03	-.09	.05	
Anx → Recall (Direct)	-.23	.22	-.66	.19	
Anx → Recall (Total)	-.24	.22	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-8.83	7.63	-23.98	6.31	
Anx → Discrimination → Extinction (Indirect)	-.03	.04	-.18	.01	
Anx → Recall (Direct)	-.02	.23	-.47	.44	
Anx → Recall (Total)	-.05	.23	-.50	.40	
Recall					
Discrimination → Recall (b path)	.46	7.19	-13.81	14.72	
Anx → Discrimination → Recall (Indirect)	.00	.03	-.05	.08	
Anx → Recall (Direct)	.20	.22	-.23	.62	
Anx → Recall (Total)	.20	.21	-.23	.62	

Table 40: 10mm vmPFC Discrimination and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.00	.01	-.01	.02	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-2.21	3.11	-8.39	3.97	
Anx → Discrimination → Extinction (Indirect)	.00	.03	-.10	.04	
Anx → Recall (Direct)	.07	.21	-.35	.48	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-5.83	3.13	-12.05	.39	
Anx → Discrimination → Recall (Indirect)	-.01	.05	-.15	.07	
Anx → Recall (Direct)	-.23	.21	-.64	.19	
Anx → Recall (Total)	-.24	.21	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.73	3.41	-7.50	6.05	
Anx → Discrimination → Extinction (Indirect)	.00	.03	-.09	.04	
Anx → Recall (Direct)	-.05	.23	-.50	.41	
Anx → Recall (Total)	-.05	.23	-.50	.40	

Recall					
Discrimination → Recall (b path)	-4.80	3.16	-11.06	1.47	
Anx → Discrimination → Recall (Indirect)	-.01	.05	-.13	.06	
Anx → Recall (Direct)	.21	.21	-.21	.62	
Anx → Recall (Total)	.20	.21	-.23	.62	

Table 41: Left Insula Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.09	.19	-.46	.28	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.02	.15	-.32	.28	
Anx → Discrimination → Extinction (Indirect)	.00	.04	-.06	.11	
Anx → Recall (Direct)	.18	.28	-.37	.74	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-.15	.16	-.46	.16	
Anx → Discrimination → Recall (Indirect)	.01	.04	-.03	.18	
Anx → Recall (Direct)	-.35	.29	-.93	.22	
Anx → Recall (Total)	-.34	.29	-.93	.22	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.19	.16	-.13	.50	
Anx → Discrimination → Extinction (Indirect)	-.02	.05	-.18	.04	
Anx → Recall (Direct)	-.01	.29	-.57	.59	
Anx → Recall (Total)	-.01	.29	-.59	.57	
Recall					
Discrimination → Recall (b path)	-.15	.16	-.47	.17	
Anx → Discrimination → Recall (Indirect)	.01	.04	-.03	.17	
Anx → Recall (Direct)	.27	.30	-.32	.86	
Anx → Recall (Total)	.29	.30	-.30	.88	

Table 42: Right Insula Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.05	.17	-.39	.29	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.20	.16	-.52	.13	
Anx → Discrimination → Extinction (Indirect)	.01	.04	-.05	.14	
Anx → Recall (Direct)	.17	.28	-.38	.73	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-.30	.17	-.63	.03	
Anx → Discrimination → Recall (Indirect)	.01	.05	-.08	.16	
Anx → Recall (Direct)	-.35	.28	-.92	.21	

Anx → Recall (Total)	-.34	.29	-.91	.23
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.16	.17	-.18	.50
Anx → Discrimination → Extinction (Indirect)	-.01	.04	-.13	.04
Anx → Recall (Direct)	.00	.29	-.58	.58
Anx → Recall (Total)	-.01	.29	-.59	.57
Recall				
Discrimination → Recall (b path)	-.25	.17	-.59	.09
Anx → Discrimination → Recall (Indirect)	.01	.05	-.06	.15
Anx → Recall (Direct)	.28	.30	-.31	.86
Anx → Recall (Total)	.29	.30	-.30	.88

Table 43: dACC Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.12	.22	-.31	.55	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.12	.13	-.14	.38	
Anx → Discrimination → Extinction (Indirect)	.01	.04	-.03	.18	
Anx → Recall (Direct)	.17	.28	-.39	.72	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-.09	.13	-.36	.17	
Anx → Discrimination → Recall (Indirect)	-.01	.04	-.16	.03	
Anx → Recall (Direct)	-.33	.29	-.90	.24	
Anx → Recall (Total)	-.34	.29	-.91	.23	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.24	.13	-.02	.51	
Anx → Discrimination → Extinction (Indirect)	.03	.06	-.06	.20	
Anx → Recall (Direct)	-.04	.29	-.61	.54	
Anx → Recall (Total)	-.01	.29	-.59	.57	
Recall					
Discrimination → Recall (b path)	-.24	.14	-.51	.02	
Anx → Discrimination → Recall (Indirect)	-.03	.06	-.22	.05	
Anx → Recall (Direct)	.32	.29	-.27	.90	
Anx → Recall (Total)	.29	.30	-.30	.88	

Table 44: Left Hippocampus Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.02	.14	-.27	.30	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.02	.20	-.37	.41	

Anx → Discrimination → Extinction (Indirect)	.00	.02	-.04	.05
Anx → Recall (Direct)	.18	.28	-.37	.74
Anx → Recall (Total)	.18	.28	-.37	.74
Recall				
Discrimination → Recall (b path)	.07	.20	-.33	.47
Anx → Discrimination → Recall (Indirect)	.00	.03	-.05	.07
Anx → Recall (Direct)	-.34	.29	-.91	.23
Anx → Recall (Total)	-.34	.29	-.91	.23
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.14	.21	-.55	.27
Anx → Discrimination → Extinction (Indirect)	.00	.03	-.09	.05
Anx → Recall (Direct)	-.01	.29	-.59	.57
Anx → Recall (Total)	-.01	.29	-.59	.57
Recall				
Discrimination → Recall (b path)	-.08	.21	-.49	.33
Anx → Discrimination → Recall (Indirect)	.00	.03	-.08	.06
Anx → Recall (Direct)	.29	.30	-.30	.88
Anx → Recall (Total)	.29	.30	-.30	.88

Table 45: Right Hippocampus Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.19	.14	-.08	.46	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.02	.21	-.39	.43	
Anx → Discrimination → Extinction (Indirect)	.00	.03	-.06	.09	
Anx → Recall (Direct)	.18	.28	-.38	.74	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-.04	.21	-.46	.38	
Anx → Discrimination → Recall (Indirect)	-.01	.05	.14	.06	
Anx → Recall (Direct)	-.33	.29	-.91	.25	
Anx → Recall (Total)	-.34	.29	-.91	.23	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.21	.22	-.64	.22	
Anx → Discrimination → Extinction (Indirect)	-.04	.06	-.23	.03	
Anx → Recall (Direct)	.03	.20	-.56	.62	
Anx → Recall (Total)	-.01	.29	-.59	.57	
Recall					
Discrimination → Recall (b path)	-.06	.22	-.50	.38	
Anx → Discrimination → Recall (Indirect)	-.01	.05	-.14	.06	
Anx → Recall (Direct)	.30	.30	-.30	.90	
Anx → Recall (Total)	.29	.30	-.30	.88	

Table 46: 5mm vmPFC Contrast and 5mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.07	.26	-.45	.59	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.05	.11	-.27	.16	
Anx → Discrimination → Extinction (Indirect)	.00	.04	-.12	.05	
Anx → Recall (Direct)	.19	.28	-.37	.74	
Anx → Recall (Total)	.18	.28	-.37	.74	
Recall					
Discrimination → Recall (b path)	-.21	.11	-.42	.01	
Anx → Discrimination → Recall (Indirect)	-.01	.07	-.20	.11	
Anx → Recall (Direct)	-.33	.28	-.89	.24	
Anx → Recall (Total)	-.34	.29	-.91	.23	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.20	.11	-.42	.02	
Anx → Discrimination → Extinction (Indirect)	-.01	.07	-.18	.11	
Anx → Recall (Direct)	.30	.29	-.28	.88	
Anx → Recall (Total)	-.29	.30	-.30	.88	
Recall					
Discrimination → Recall (b path)	-.01	.11	-.23	.22	
Anx → Discrimination → Recall (Indirect)	.00	.04	-.09	.06	
Anx → Recall (Direct)	-.01	.29	-.59	.57	
Anx → Recall (Total)	-.01	.29	-.59	.57	

Table 47: Left Insula Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.09	.19	-.46	.28	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.07	.11	-.16	.29	
Anx → Discrimination → Extinction (Indirect)	-.01	.03	-.11	.02	
Anx → Recall (Direct)	.07	.21	-.34	.49	
Anx → Recall (Total)	-.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-.06	.12	-.29	.17	
Anx → Discrimination → Recall (Indirect)	.01	.03	-.02	.10	
Anx → Recall (Direct)	-.24	.21	-.67	.18	
Anx → Recall (Total)	-.24	.21	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.18	.12	-.06	.43	
Anx → Discrimination → Extinction (Indirect)	-.02	.04	-.16	.04	

Anx → Recall (Direct)	-.03	.23	-.48	.42
Anx → Recall (Total)	-.05	.23	-.50	.40
Recall				
Discrimination → Recall (b path)	-.11	.12	-.34	.12
Anx → Discrimination → Recall (Indirect)	.01	.03	-.02	.12
Anx → Recall (Direct)	.19	.21	-.24	.61
Anx → Recall (Total)	.20	.21	-.23	.62

Table 48: Right Insula Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	-.05	.17	-.39	.29	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.05	.12	-.29	.19	
Anx → Discrimination → Extinction (Indirect)	.00	.02	-.03	.07	
Anx → Recall (Direct)	.06	.21	-.35	.48	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-.18	.12	-.42	.07	
Anx → Discrimination → Recall (Indirect)	.01	.04	-.04	.11	
Anx → Recall (Direct)	-.25	.21	-.67	.17	
Anx → Recall (Total)	-.24	.21	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	.18	.13	-.08	.45	
Anx → Discrimination → Extinction (Indirect)	-.01	.04	-.13	.04	
Anx → Recall (Direct)	-.04	.23	-.49	.41	
Anx → Recall (Total)	-.05	.23	-.50	.40	
Recall					
Discrimination → Recall (b path)	-.16	.12	-.40	.09	
Anx → Discrimination → Recall (Indirect)	.01	.03	-.04	.12	
Anx → Recall (Direct)	.19	.21	-.23	.61	
Anx → Recall (Total)	.20	.21	-.23	.62	

Table 49: dACC Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.12	.22	-.31	.55	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	.12	.10	-.07	.31	
Anx → Discrimination → Extinction (Indirect)	.01	.04	-.03	.14	
Anx → Recall (Direct)	.05	.21	-.36	.46	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-.06	.10	-.25	.14	

Anx → Discrimination → Recall (Indirect)	-.01	.03	-.11	.02
Anx → Recall (Direct)	-.23	.21	-.65	.19
Anx → Recall (Total)	-.24	.21	-.66	.18
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	.19	.10	-.02	.40
Anx → Discrimination → Extinction (Indirect)	.02	.05	-.05	.16
Anx → Recall (Direct)	-.07	.23	-.52	.37
Anx → Recall (Total)	-.05	.23	-.50	.40
Recall				
Discrimination → Recall (b path)	-.18	.10	-.38	.01
Anx → Discrimination → Recall (Indirect)	-.02	.05	-.16	.04
Anx → Recall (Direct)	.22	.21	-.20	.64
Anx → Recall (Total)	.20	.21	-.23	.62

Table 50: Left Hippocampus Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.02	.14	-.27	.30	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.08	.15	-.37	.21	
Anx → Discrimination → Extinction (Indirect)	.00	.02	-.05	.04	
Anx → Recall (Direct)	.07	.21	-.35	.48	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	.06	.15	-.24	.35	
Anx → Discrimination → Recall (Indirect)	.00	.02	-.03	.06	
Anx → Recall (Direct)	-.24	.21	-.66	.18	
Anx → Recall (Total)	-.24	.21	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.13	.16	-.45	.18	
Anx → Discrimination → Extinction (Indirect)	.00	.03	-.07	.04	
Anx → Recall (Direct)	-.05	.23	-.50	.40	
Anx → Recall (Total)	-.05	.23	-.50	.40	
Recall					
Discrimination → Recall (b path)	-.05	.15	-.35	.24	
Anx → Discrimination → Recall (Indirect)	.00	.02	-.06	.04	
Anx → Recall (Direct)	-.20	.21	-.23	.62	
Anx → Recall (Total)	.20	.21	-.23	.62	

Table 51: Right Hippocampus Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.19	.14	-.08	.46	
SCR during CS+					

End of Extinction				
Discrimination → Extinction (b path)	-.08	.15	-.39	.22
Anx → Discrimination → Extinction (Indirect)	-.02	.03	-.11	.01
Anx → Recall (Direct)	.08	.21	-.34	.50
Anx → Recall (Total)	.06	.21	-.35	.48
Recall				
Discrimination → Recall (b path)	-.04	.16	-.35	-.27
Anx → Discrimination → Recall (Indirect)	-.01	.04	-.11	.04
Anx → Recall (Direct)	-.23	.22	-.66	.20
Anx → Recall (Total)	-.24	.21	-.66	.18
SCR during CS-				
End of Extinction				
Discrimination → Extinction (b path)	-.20	.17	-.54	.13
Anx → Discrimination → Extinction (Indirect)	-.04	.05	-.19	.02
Anx → Recall (Direct)	-.01	.23	-.47	.44
Anx → Recall (Total)	-.05	.23	-.50	.40
Recall				
Discrimination → Recall (b path)	.00	.16	-.31	.32
Anx → Discrimination → Recall (Indirect)	.00	.03	-.07	.08
Anx → Recall (Direct)	.20	.22	-.23	.63
Anx → Recall (Total)	-.20	.21	-.23	.62

Table 52: 10mm vmPFC Contrast and 10mm vmPFC

	b	SE	LLCI	ULCI	sig
A Path					
Anx → Discrimination (a path)	.05	.19	-.34	.43	
SCR during CS+					
End of Extinction					
Discrimination → Extinction (b path)	-.15	.11	-.36	.07	
Anx → Discrimination → Extinction (Indirect)	-.01	.04	-.14	.06	
Anx → Recall (Direct)	.07	.21	-.34	.48	
Anx → Recall (Total)	.06	.21	-.35	.48	
Recall					
Discrimination → Recall (b path)	-.23	.11	-.45	.02	
Anx → Discrimination → Recall (Indirect)	-.01	.06	.17	.09	
Anx → Recall (Direct)	-.23	.21	-.64	.19	
Anx → Recall (Total)	-.24	.21	-.66	.18	
SCR during CS-					
End of Extinction					
Discrimination → Extinction (b path)	-.04	.12	-.28	.19	
Anx → Discrimination → Extinction (Indirect)	.00	.03	-.09	.04	
Anx → Recall (Direct)	-.05	.23	-.50	.41	
Anx → Recall (Total)	-.05	.23	-.50	.40	
Recall					
Discrimination → Recall (b path)	-.15	.11	-.37	.06	
Anx → Discrimination → Recall (Indirect)	-.01	.04	-.13	.06	
Anx → Recall (Direct)	.20	.21	-.22	.62	

Anx → Recall (Total)	-.20	.21	-.23	.62

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